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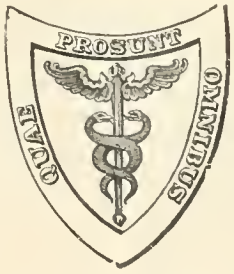

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ORIGINAL ARTICLES.

MEDICAL EDUCATION IN COLORADO.

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IN one of the choicest essays ever contributed to medical literature, entitled "Chauvinism in Medicine," William Osler speaks of the "art of detachment as that rare and precious gift which enables one to separate himself from his environment and to take a panoramic view of the conditions under which he lives." Is it not well for the profession of Colorado employing this art of detachment, to undertake a philosophic view of its lights and shadows, its present realities and future possibilities?

The trend of the profession is directly dependent upon the thought and work of medical education. Educational influences alone mould the character, determine the proportions and direct the future of the body medical. These influences are not to be referred entirely to medical schools, but to a certain degree may be said to surround the practitioner throughout his active career, from close association with the state society and other medical organizations. To the medical educational institutions, however, there must be accorded a predominant influence upon the real tone and vigor of the profession, as well as a representation in part of its true sphere in the sociological scale. It is then to medical education in the schools of Colorado that attention may be justly directed. Unpleasant as the task may eventuate it is apparent that the time has come for the profession of the state to confront certain essential and relevant facts, and take due cognizance of their significance.

In order more clearly to appreciate our relative position it is necessary to consider at some length the general status of medical education in the United States. The real object and scope of medical schools throughout the country is of necessity changing with the varying conditions of our national civilization. The remarkable advance in medical knowledge has demanded corresponding changes in the manner and extent of imparting instruction, as exhibited in the four years' graded and systematic course of study, the increased minimum requirements for admission, the great enlargement of the curriculum by the introduction of new branches and methods of study, the increased attention to various kinds of laboratory work with opportunity afforded for the acquirement of precise scientific information capable of actual demonstration and the amplification of the hospital and dispensary facilities with the patient rather than the disease, furnishing the text and inspiration.

Up to this point the majority of the medical schools of the United States in so far as opportunities permitted, have endeavored with varying degrees of good faith and exactitude, to keep step with the onward march of medical education. Assuredly the two medical schools of Colorado have not been lacking in an earnest desire to remain "en rapport" with the recent advances and in a sustained effort to elevate the standard of higher medical education within the state. Speaking for the Denver and Gross College of Medicine, it is asserted that all the advanced methods of teaching medicine are observed in the course of study and that all provisions embodied in the curriculum in conformity with the requirements of the Association of American Medical Colleges are rigidly and conscientiously executed.

Coincident with the pedagogic advances in medicine during the past decade there have also taken place marked changes in the general sociologic and economic conditions relating to medical practice. As a result radical innovations have been inaugurated in some of the larger institutions of medical learning which have not as yet been incorporated in the medical schools of Colorado, and which may be said to constitute a vital change in the policy and purposes of all institutions adopting them. While many of these changes are directly in line with the progress of modern medical thought and are alike indicated in the interests of the medical profession, the medical student and the community, they none the less aim at the very root and life of some of the smaller institutions. An explanation of the recent agitation is found in the supposedly unhealthful conditions of medical education due to the alleged multiplicity of medical schools resulting in a so-called oligarchy and in the apparent superfluity of medical students.

It must be admitted that during the past twenty years the number of medical schools in the United States has nearly doubled, and despite the elevation of standards and higher requirements the number of students during this period has increased one hundred per cent. Billings has recently pointed out that the present average is one physician to every six hundred people, and that with the natural increase of our population together with deaths in the profession, there is reasonable opportunity based on this proportion for the accession of three thousand graduates annually. The fact exists that nearly twice this number are actually graduated and also that the proportion of one to six hundred is regrettably high.

Based upon such a showing it is to be expected

[1] Read before the Colorado State Medical Society, in Denver, October, 1904.

that the popular demand should be for fewer medical schools and fewer but better educated doctors. Accordingly the dictum virtually has been promulgated on the part of some of the larger institutions that the moral right of existence be denied some of the smaller schools. In so far as this condemnation and stamp of disapproval applies to institutions existing, not because of a valid need but flourishing as a public and professional menace, there can be no honest difference of opinion among medical educators.

With inferior teachers and entire absence of proper facilities these ventures in the past have frequently proved not unprofitable as commercial enterprises, the principle having been the maximum production at the minimum expense. Such factories unfortunately have been furnished with sufficient raw material to keep the plant in operation and foist the inferior product of the wretched machinery upon society. It is well known that the number of these bastard medical schools already has diminished materially. There remain, however, many comparatively small institutions of recognized merit and established reputations with accorded honesty of purpose and highest motives, together with suitable equipment of teachers, buildings and apparatus, and with ample clinical advantages. Some of these honorable institutions have enjoyed prolonged periods of usefulness and are now striving zealously to uphold the standard of medical education.

Their distinctive sphere and high order of working ideals is beyond question. Recognized advantages do accrue from the more intimate contact of professors and students, the close relationship permitting such interchange of thought as more perfectly to awaken incentives and inspire highest endeavor. However, it has been intimated that the life of these institutions is seriously threatened if they attempt to conform in fullest measure to the advancing standards of medical education. The reason may be ascribed to exist in the lessened revenue from tuition resulting from the diminished number of students and the greatly increased expense, both of which conditions are presupposed to obtain from the higher requirements and advancing scope of modern medical institutions. It is well to inquire more particularly into the rationale and validity of these premises.

The overcrowding of the profession incident to the multiplicity of medical schools constitutes a factor in the problem of medical education worthy of most serious thought by those who, in official positions, have to assume a portion of the responsibility in graduating classes still further to swell the ranks and increase the competition.

The responsibility of medical schools attaches to the students whom they receive and graduate, and to the community at whose doors the foundlings in medicine are wantonly abandoned. The student has the right to expect after the expenditure of considerable money and years of hard and faithful preparation, a reasonable opportunity by virtue of his training and actual fitness to provide for his family and secure ultimately a satisfactory competence. The public is entitled to the belief in the thoroughness of the student's preparation, the character of his moral attainments and the high degree of his fitness to fulfill the exacting requirements and assume the responsible obligations of his profession.

It would seem to be in line with medical progress to place such rigid restrictions upon the course of study as greatly to diminish the number of graduates and at the same time to increase their practical proficiency. Yet despite the constantly increased requirements in many of the schools, the lengthening of the course, the added cost of securing a medical education, the appreciation of the utter impossibility of attaining proficiency in all of the branches owing to the enormous mass of medical knowledge, notwithstanding, also, the repeated warnings of the profession as to the uncertainties of success in practice, there yet appears to be an actual increase in the number of students who matriculate each year. "The large number of young men who in the face of these discouragements are willing and anxious to undertake the laborious task of systematic medical study, implies a certain change in the motives and aspirations of at least a portion of the more liberally educated students of to-day. Some are anxious to begin the study of purely scientific aspects of medicine with its opportunities for original research and investigation, while others are attracted early to the possible attainment of special knowledge and skill in certain departments in the hope of teaching as a life work, or subsequent contributions to the science of medicine rather than to the practice of the art or to the acquirement of a lucrative income."[1]

This has involved the appreciation on the part of the faculty and trustees of some of our medical schools that the true province of such institutions is not simply to graduate working doctors but also to educate physicians of culture in its broadest sense, a sense by no means purely technical. It follows that the real mission of a modern medical school should be sufficiently comprehensive to provide for the rendering of post graduate instruction, and to afford opportunity for the pursuit of original research by certain of the faculty and by students who may elect so to do. One of the working ideals of such an institution should be toward the possible enlargement of the practical application of pure science, the investigation of new discoveries and the proper interpretation of new phases of medical learning.

The educative influence and the beneficence of such an institution, not only upon the profession but upon the community, is entirely beyond the powers of description. If then the purposes of a modern medical school are along the lines that have been suggested, supplementary to its traditional work of educating practising physicians, it is recognized that the fulfilment of its mission involves the necessity of fundamental changes,

[1] "Internal Medicine: To What Extend Required or Elective in the Medical Course." By the author.

though these changes need not necessarily be sufficient to effect a complete transformation in its internal economy.

Actual statistics do not show that either the revenue from tuition or the number of students is likely to diminish on account of the increased requirements for admission. It becomes apparent that the small medical schools of high standards will suffer no material loss from this cause and that the opportunities for success in practice by virtue of a desired lessened competition are not to be thus improved. As in the past it will ever remain, among the young practitioners, a simple question of the survival of the fittest. Without resorting to invidious comparisons, it may be further added that the fittest do not always emerge from the largest institutions. It is asserted then that, so far as relates to entrance requirements, the smaller schools without fear or prejudice to their own interests may cooperate to an equal degree with others in an effort to raise the present standards.

If there be perfect sincerity of purpose and earnest enthusiasm for the uplifting of medical education it is apparent that perfunctory conformity with the requirements as laid down by the Association of American Medical Colleges is insufficient for the accomplishment of the best results. Anyone at all familiar with medical educational affairs is undoubtedly impressed by the frequent evidences of laxity and bad faith concerning entrance requirements on the part of even some of our larger and apparently prosperous institutions. It is evident from the very nature of the conditions that they admit of such elastic application on the part of interested and partisan examiners as virtually to deprive them of much of their actual value. It is suggested that the examinations should be conducted by disinterested, unprejudiced and competent educators having no connection with the institution, and that there should be a uniformity of entrance requirements in different States, together with at least an approximate understanding as to the subsequent grading of instruction. This much-to-be-desired advance can best be brought about by legislative enactment placing the matter of entrance examination and systematic teaching under the control of a state board of medical examiners, acting under the supervision of and in conformity with a national organization. Such a course can in no wise lower the standards of reputable institutions that are already inspired to maintain a high order of entrance requirements, and it will surely dispense with the flexible and shameless morals of others. As to the second proposition, viz., the greatly increased expense incident to conducting a modern medical school, it must be admitted as has been suggested by others, that under the new and higher régime of medical instruction the proprietary school, save under exceptional circumstances, is greatly handicapped by lack of proper facilities in its effort to keep pace with the advances instituted by the university schools.

The actual cost necessary to provide opportunity for a legitimate medical education is increasing at a prodigious rate. In view of this it requires no prophet to show that the medical school of the future without financial assistance and support will be unable to exist if its ideals are high and its purposes progressive. Medical schools have long ceased to be a profitable business proposition, as any yearly surplus, if such exists, usually reverts to the school in the way of further equipment, and this in the face of the fact that the teachers devote time and energy unrestricted without compensation. The increasing cost of maintaining reputable and honored institutions is incident to the necessity of larger buildings with more complete laboratory equipment and apparatus. More important than this is the salary of certain of the faculty who should be compelled in progressive institutions to devote a large portion if not all of their time to the school. This, of course, refers more particularly to those teaching some of the scientific branches of the first and the second year. The nature of the work demanded in the various laboratories is such as to command the undivided time of the teacher and entitle him to a just compensation according to his ability and attainments. There can be no question that the success and usefulness of any school will depend to a large extent upon the character of the scientific work in the early part of the course, and this involves a large outlay for experienced and competent instructors devoting their entire time to their several duties. The number of such instructors is necessarily larger, in proportion to the number of students, than formerly on account of the necessity for individual or group teaching.

For the foregoing reasons it must be clear that in order to meet the demands imposed by the changed conditions of medical education, relief must be sought in one or two ways, first, from a close university connection, or second, if the autonomy of the medical school is to be preserved, by provision for its separate endowment. As to the matter of university affiliation, the real value to the medical school in this connection consists in the substantial aid resulting from the closeness of the relations, the control of the financial affairs, the assumption of the obligations and the guarantee of the future. Thus it is that nestling under the wing of *bona fide* universities offers to the medical school its protection, its most complete usefulness and its greatest permanency.

Nominal connection with a university avails nothing and passes for what it is really worth, a cheap subterfuge. In what way does it profit a medical school, as suggested by Dobson, to be denominated the medical department of a university embracing in its catalogue beside its department of liberal arts, one of medicine, dentistry, pharmacy, law, music, etc., the extent of which connection is summed up by its catalogue announcement to this effect and the appearance of its presiding officer once a year to confer degrees and make an address? With each depart-

ment maintaining its separate board of trustees and in absolute control of its apparatus and finances it is difficult to perceive the influence for good resulting from such an alliance. Unless the relations are more close and mutually reciprocal with the university extending financial and moral support to the department from which it derives its largest quota of students and which furnishes the basis for its claims for prosperous usefulness, the medical school is placed in a far better position by standing substantially upon its own intrinsic merits as an institution purely of medical learning.

Another advantage resulting in an actual university connection is claimed in the opportunity offered for the so-called "telescoping" of a part of the medical studies with those of the university, thereby permitting the shortening of the time devoted to academic and medical preparation by one or two years. The manner in which it has been advocated that this be accomplished is of somewhat variable character.

This phase of the subject of university connection is of vast importance and worthy of most thoughtful consideration even in those institutions where it is easily practicable. In its fullest interpretation, viz., the conducting of the first two years of medical instruction within university walls as a part of the work for an A.B. degree, it must be recognized that it presupposes the advantages of an education purely technical, to the exclusion of that broad and liberal culture derived only from college association and training.

This conception of the early invagination of the academic and medical courses is clearly in direct opposition to the spirit claimed by its adherents, to the effect that two years' association with college men in a university is reflected in added culture and refinement accruing to medical students. If such is the effect of the university atmosphere and if it is necessary to raise the standards of admission, and if the two leading medical schools of the United States, Harvard and Johns Hopkins, have had the courage to demand a full A.B. degree based upon clinical and scientific requirements, wherein is the strength of the position taken by Rush that the preparatory training can be shortened by half and still retain the broadening influences of a college course or maintain an equal standard of excellence in its requirements? If two years' association with college students while engaged in scientific medical study and necessarily deprived of the most valuable portion of a college course is a good thing, then the entire preliminary training is surely better and productive of a higher type of education. While institutions adopting the telescoping plan are entitled to great commendation for progressive thought and action, and while their course is a distinct advance over previous requirements, the fact seems clear, nevertheless, that this position is not sustained by the argument that a part can be equal to the whole. It seems to remain a matter of reasonable doubt, however, if a shortening by one year of the time of preliminary college training might not be effected without very materially detracting from the sufficient preparation of the student for medicine. This thought is emphasized by the growing tendency to specialism rising from the popular and professional demand on account of the enormous mass of medical knowledge.

Even to these, however, it must be insisted that the chief factor in advancing the science and art of medicine has been, not only the high degree of special attainment, but also the underlying basis of broad fundamental knowledge.

As to the endowment of the medical school of the future with or without university connection, let the proposition be now advanced that there exists no moral obligation upon society greater than this. Viewed either from the standpoint of true philanthropy or mere commercial instinct there can be no more valid claim for financial support. In no other department of human endeavor have there taken place such astounding advances, with such unspeakably beneficent results as exhibited even in the past fifty years of medical progress. What accomplishment in the centuries past has so resulted in the lessening of suffering as the discovery of anesthesia? What has so lengthened the span of existence as the recognition of asepsis? Can any appeal to society savor more of pure benevolence than that which has for its purpose the saving of life and the relief of pain? In what manner has there ever occurred such preservation of communities as has resulted from the study and investigation of yellow fever, typhoid fever, diphtheria, cholera, bubonic plague and malaria? Has anything been more intensely practical than the municipal application of the principles of modern sanitation? Is there offered to society any better return upon the investment than that from which it derives its protection and permanency?

The recent achievements in medicine are sufficient, as Osler remarks, "to make even the angels rejoice," and it may be added also are all contributory to the suicide of the purely business aspects of the profession, and these have resulted from the labors of medical men with the facilities and incentives afforded by medical schools. Who can state that the final achievement has already been attained in the evolution of medical progress? Who can tell what the future has still in store as a result of further stimulation to medical science and investigation? The debt of society to medicine is indeed great and the fact that it is not more duly and fully appreciated must be construed in part to the apathy of the profession itself. Should not medical institutions justly look to the communities which are favored by their presence for an equitable measure of assistance and support?

The obligation is equally great upon the profession of any locality to extend to its reputable medical schools its legitimate aid and loyal support. It should be incumbent upon all those actively engaged in the cause of medical education to solicit financial aid for the institutions which

they represent from the wealthy with whom sufficiently close relations may be enjoyed. There can be no difficulty about the suitable endowment of these medical schools worthy of patronage provided a proper enthusiasm and an earnest devotion be manifested by its faculty.

Apropos of the foregoing remarks it may be inquired to what extent and in what manner the medical schools of Colorado, and through them the profession of the State, may profit by the thought and effort that has been exhibited by educational institutions in other States.

While the profession of Colorado may not be in a position to take the very lead in matters of medical education, it can be asserted confidently that she is abundantly able to follow in the footsteps of some of the older States. It may not be out of place to assert that already a distinct advance in medical education within the State assuredly has taken place. Two of the older medical colleges of Colorado, each of which had previously enjoyed a successful, useful and honorable career, have effected recently a harmonious consolidation, the prime motive and inspiration of which existed in a conscientious effort to elevate the working ideals of medical education in our midst. In this the beginning of its second term, one is enabled to look back upon a year of faithful endeavor, a period of unbroken harmony and perfect concord, an absolute community of interests among its faculty and an increasing influence among the profession.

What is the legitimate *raison d'être* of a medical school in Denver? Such an institution has an especial right to exist and a claim for support by virtue of the extent of higher scientific and practical work being accomplished by its faculty, its geographical position and the actual needs of the community. Denver is rapidly becoming more and more a medical center on account of its obvious climatic advantages. Thither are attracted an increasing number of highly educated physicians who previously have enjoyed special opportunities for study and research and already achieved distinction in their respective departments. There has resulted a grouping of well equipped observers, a larger corps of trained educators than can be found in any other city of this population in the United States. The character of medical educative thought and work in the city of Denver has obtained a merited national recognition. This working capital of medical culture and experience is being utilized for the benefit of young men in medicine and for society. It offers opportunity for a large number of medical students whose education in other schools located in relatively unfavorable climates has been interrupted by virtue of ill health to complete their education in Colorado and enjoy ultimately the fruits of their previous labors.

The Denver and Gross College of Medicine, although maintained under a separate charter and distinct board of trustees, enjoys, nevertheless, a close and direct affiliation with the University of Denver, from which connection material advantages constantly accrue. In order to impose greater requirements to admission and further advance the cause of medical education in line with the progress exhibited in other schools it will be necessary first to secure suitable endowment. The University of Denver, now beginning the era of her prosperity, undoubtedly will respond in the way of financial assistance, as opportunity presents itself for increasing the usefulness of her medical department and in the institution of a coherent and graded course for those contemplating medicine which will look toward the shortening of the combined academic and medical course by one year, and at the same time relieve the medical department of the expense of conducting its first year in medicine by high-salaried teachers.

There exists still another medical institution within the State, sustained partly by State aid, enjoying the patronage and backing of a strong university and possessing in this way exceptional facilities for its preparatory work of the first two years. Its greatest usefulness is curtailed largely by its mandatory location in a small community where to some extent it is deprived of clinical advantages for junior and senior students.

There is another useful and extremely successful educative institution but without a medical department, whose able corps of professors and laboratory facilities could be augmented easily to provide adequate instruction by paid teachers during the early portion of a medical course, but which would still be without the necessary clinical advantages to be found in a large city like Denver.

The thought is suggested, Is it too much to hope that in the fulness of time the relations betweeen the several institutions in Colorado could be so amicably and satisfactorily adjusted as to permit the existence of a single medical school, not necessarily in direct affiliation with any university but enjoying such close and pleasant relations with every educational institution of the State as to permit in cooperation with each, the conducting for all students of the practical clinical work of the latter part of the medical course in Denver, where alone proper facilities can be found? In this way alone can we hope to rise materially from our present level and place the educational status of the medical profession upon the plane where it can best and most truly represent the State. When the logic of time shall have sufficiently wiped out all differences and local prejudices so as to disclose clearly the wise application of one supreme allegiance, and that to the profession which we represent and whose standard we are striving to elevate, then will it be comparatively easy to secure such legislative enactment as will place the control of medical educational affairs within the hands of a State board subject to the will and approval of the profession, and then will inevitably follow a State law controlling the practice of medicine. There will then result a closer bond of union between the medical schools and the various medical societies and or-

ganizations including the many hospitals, State and municipal boards of health. Thus each being the creation and representative of the profession, a loyal devotion to its own interests would result in the appointment to all important medical offices and hospitals with reference to special fitness for administration or teaching and not as a mark of political or other preferment.

The position of the medical profession in Colorado is at this time distinctly unique, but it is within its power to assert itself by strong and mutually sympathetic effort to raise the standard of medical education and set an example which many of the older States can well afford to emulate.

A CONSIDERATION OF THE QUESTION OF DRAINAGE IN CASES OF ACUTE APPENDICITIS WITH SPREADING PERITONITIS.[1]

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Although the treatment of acute appendicitis by early operation, or in the so-called interval, is highly satisfactory, a study of the statistical tables of some of our largest hospitals show, in the gangrenous and perforative forms of the disease, and in those cases in which a rapidly spreading purulent peritonitis is a complication, results which are often disappointingly bad, a high mortality and that the views of various surgeons as to proper methods of procedure are at considerable variance.

During the past nine years in a small though somewhat active emergency hospital service, the writer has been called upon to treat a number of the more serious forms of appendicitis and to struggle with the problems presented by each. In looking back over his earlier work and in trying to explain why his methods of attack and defense have gradually altered, and in trying to find out if possible why the operative mortality in his hospital service has decreased so considerably, only one conclusion can be reached. Of course it is perfectly possible for a surgeon to have a run of good fortune or to secure a long list of carefully selected cases with a very low mortality.

In an active hospital service, however, where, as a rule, the worst cases are seen, and where "late" operations are rather the rule than the exception, in justice to oneself it becomes necessary to find out how much of the improvement in results is due to good luck, and how much to good management. An examination of the records of my own operative work in appendicitis at the J. Hood Wright Hospital, for the past nine years has proven highly instructive to me, and, with the hope that it may not be entirely without interest to you, the writer asks your attention to his method and your criticism of his results in a class of cases which are everywhere taxing the best energies of surgeons.

[1] Read by invitation before the Surgical Section of the Buffalo Academy of Medicine, March 1, 1904.

From January, 1895, to January, 1903, 114 cases have come to operation in the writer's service at the above-named hospital. From 1895 to 1898, inclusive, 42 cases were operated upon, with 13 deaths, a mortality of about 31 per cent., and from 1899 to 1902, inclusive, 72 cases were operated upon, with no mortality. Whole mortality being a little less than 11½ per cent. These cases can all be verified in the hospital records and constitute an unbroken series of operations in the writer's service of four months each year, together with such odd cases as have been operated upon by him at other times in the same years at the same hospital.

During the first period from 1895 to 1899, the character of the cases was about the same as during the later period, and operation was done in every case with a view solely to the relief of the patient and not with reference to the mortality statistics of the operator or the hospital.

In going over in his mind the changes, and, as he believes, the improvements in technic, which have gradually taken place, the writer is forced to believe that in the earlier years, in the efforts to save these desperate cases, too much traumatism was unwittingly inflicted, and too little attention paid to the efforts of nature in the same direction.

In the first series of 42 operations from 1895 to 1899, 8 cases were classed as acute appendicitis, with no deaths; 3 as acute catarrhal, no mortality; 4 were chronic recurrent, no mortality; 1 an "interval" case, no mortality; 7 were acute suppurative with abscess, 1 death. One of these cases in a second acute attack was operated upon for the removal of the appendix and recovered; 7 were gangrenous with 2 deaths—1 being from acute pneumonia, in thirty-six hours. 12 were cases of rapidly advancing peritonitis with free pus in the peritoneal cavity, and of these 11 died.

In the second period from January, 1899, to January, 1903, the records show 72 cases operated upon in my service. Of these, 15 were acute; 7 were chronic; 2 were "interval" cases; 1 suppurative, no perforation; 5 suppurative with abscess; 26 gangrenous with and without perforation; 1 tuberculous; 15 gangrenous, with advancing peritonitis.

Of these 72 cases, there was a very large proportion of "late" operations and of very serious cases of the gangrenous and suppurative forms, besides the 15 cases of spreading peritonitis, to which your special attention is called.

That there was no mortality in the last class, seems to the writer suggestive at least of the attainment of a better and safer technic than in 12 similar cases of the first group wherein but one recovery is recorded. In these earlier cases the operator was conscious of striving to do all that could be done and all that generally was done by other surgeons at the time, with whose work he was familiar, and the results matched fairly well the results in other hospitals with which he was at the time connected.

At first the methods which he now employs were rejected as entirely unsafe and unsound, but

the writer has gradually been forced to abandon his original position and has amply demonstrated, at least to his own mind, the great value of the smaller incisions, of the location and removal of the appendix largely by the sense of touch, which does away with over much exposure and handling of the intestines, the free irrigation of the peritoneum with hot normal salt solution, depending upon this rather than drainage and the removal of the diseased appendix in every possible case. This radical departure, in practice, has been so gradual, that the steps cannot always be analyzed. Results seem certainly to justify the change in technic, although the writer is free to confess that not without a struggle has he accepted and adopted measures which, but a few years ago, he looked upon as dangerous and unscientific.

Modern experimental investigation has abundantly demonstrated the marvelous power of the peritoneum to deal with infection. The introduction of pure cultures of pyogenic organisms does not cause fatal peritonitis and sepsis unless there be an overwhelming dose, or the local resistance be lowered by traumatism, or the presence of an irritating foreign body. Clinical experience has repeatedly attested the truth of these experimental researches and if it were not so, abdominal surgery would long since have ceased to flourish. In acute progressive appendicitis, nature strives to wall off the diseased organ by a barrier of plastic exudate and throws out a powerful second line of defense against general infection by bringing about marked hyperleucocytosis. As Clark has well said, "the safety of the patient in the early stage of peritonitis depends not only upon the quick delivery of serum and leucocytes into the peritoneal cavity but also upon their rapid exit." "There are no blood vessels within the body," to quote the same author, "capable of such quick action in this physiologic function as those of the omentum." And further on he says "the index of lethality in experimental infections may be judged from the varying degrees of leucocytosis. Where an excessive increase is followed by a rapid decrease of leucocytosis with increasing gravity of symptoms, this indicates that the toxicity of the organisms has overcome all phagocytosis or germicidal power of the blood serum and a fatal result will ensue."

The analogy between acute infective appendicitis and the experimental introduction of germ cultures into the belly in the presence of a foreign body, is more or less perfect. Nature attempts at first to encapsulate, then to destroy, dissolve and carry away the offending body. In the case of blood clots, pus, fibrin exudate, and smaller foreign bodies, she may be fully equal to the task.

In the case of the gangrenous appendix, however, the task is, as a rule, too much for the natural physiological processes to accomplish, unaided. Under these conditions the attack of the organisms upon the defensive forces of the peritoneum, may be so sudden as to overwhelm them; or, if this does not occur they may be more gradually overcome by the rapidly increasing attacking forces battering down the first line of defenses and establishing secondary foci, from the combined action of which the secondary defenses may be overwhelmed and the patient destroyed. What then should be our method of treating these cases of advancing peritonitis, due to an infected appendix? Obviously the first thing to do is to remove the focus of infection, the appendix, and to do it in such manner as not to cripple the inherent power of the peritoneum to deal with such toxic products as must necessarily be left behind. The infected peritoneal cavity cannot be made absolutely clean by any known method, and, recognizing the fact that in removing the diseased appendix, we have removed the principal bar to recovery, we must acknowledge the inutility and the danger of attempting to obtain perfect peritoneal drainage through the medium of gauze packing between intestinal coils or by means of the drainage tube.

We are thus driven to rely upon the normal physiological power of the peritoneum to extricate us from our difficulty. The clinical work of Morris, the experimental and clinical work of Clark, and, more recently, the work of Blake and other surgeons, who are beginning to rely upon the natural protective forces of the human organism to solve the difficult problem of peritoneal drainage, should give us courage to proceed along these lines. During the past few years, the writer has grown to rely almost wholly upon the flushing of the peritoneal cavity with hot normal salt solution, rather than upon any method of external drainage. Long before its real value was appreciated he had relied upon it to combat shock in severe operations and to dilute and carry off the toxins in the various toxemias which occurred in the course of his surgical work.

A reference to the group of cases which is appended will attest the frequency and extent with which peritoneal irrigation with hot decinormal salt solution has been employed. For the past five years or more the writer has used the muscle-splitting incision of McBurney, as a method of approach in most of his cases of acute appendicitis, even in many of those accompanied by widespread suppurative peritonitis. On the whole it has proven adequate to the work; and, in connection with the Weir extension through the posterior rectus sheath, offers a sufficiently wide exposure to do most of the necessary work required. In some cases, however, where a gangrenous and suppurative process has extended up behind the colon to the region of the liver, a counter opening in the loin has been made and local drainage carried on through this. Extensive gauze packing after operation has been abandoned, and local drainage of the wound and of the site of the principal focus of infection, when deemed necessary, has been carried on by small wicks of gauze wrapped in rubber tissue. The peroxide of hydrogen solution has proven valuable in cleansing the abscess cavity about the appendix and in loosening somewhat the adhesions about the organ and in making its delivery

by touch somewhat easier. Where the appendix is retrocecal and largely retroperitoneal it can be located by the sense of touch, standing out in low relief upon the posterior wall of the cecum; its base is located by following the longitudinal bands and developed by incisions through the peritoneum on either side of it, it is then ligated, divided and delivered, working from the proximal end outward.

When free pus is found in the peritoneum no attempt is made to wall off the appendix from the rest of the cavity by pads, but the organ is delivered as rapidly as possible, largely by the sense of touch, its mesentery ligated and divided in the usual manner, and its base pulled up together with the cecum into the wound, ligated, excised, and the stump turned in by purse-string sutures, often with the addition of a Lembert stitch. After the removal of the appendix, which is accomplished with as little traumatism as possible to the surrounding intestines, the pelvic cavity, the lower abdomen, and, in many cases as much as possible of the general peritoneal cavity, is flushed thoroughly with hot decinormal salt solution, through a large tube, or by pouring in from a pitcher, until the back-flow appears fairly clean. No attempt is made to sponge the peritoneum dry and considerable fluid is always left behind. The peritoneal wound is either closed entirely, as in my later cases, and the external wound drained; or, as has been the custom in most of the earlier cases, a small cigarette drain has been passed to the appendical site and sometimes to the bottom of the pelvis. Inasmuch as nearly all the wounds from contact have become infected with the gangrenous appendix, apparently with the same organism which has caused the appendical inflammation, it cannot be considered proper to close the external wound without providing for drainage. It has become evident to the writer from a number of observations that the cigarette drain which extends into the peritoneal cavity acts mainly as an external wound drain, since he has repeatedly noticed that the peritoneal cavity outside a very small area is rapidly shut off and no longer comes within its radius of action.

Relying upon these observations the drain has practically been eliminated as a factor of any importance in the treatment of spreading peritonitis, except in so far as it acts as a drain for the external wound, which, in most of these cases, is an infected wound and heals by granulation. The paper of Clark and Norris, on "Peritoneal Saline Infusions in Abdominal Operations," combining as it does the results of clinical study and laboratory experiment, draws the following conclusions: First, the use of salt infusions does not increase, but unquestionably minimizes the danger of pyogenic infection. Second, in addition to reduction of mortality, the convalescence of the patient is rendered infinitely more comfortable and satisfactory through the reduction of thirst, the increase in the urinary excretion and the minimizing of vesical irritation. With these conclusions the clinical experience of the writer entirely agrees. Long ago we have noticed in patients who have had saline infusions either by the vein, the rectum or the abdominal route or by hypodermoclysis, a very rapid disappearance of the odor of ether from the breath, and marked increase in the urinary secretion. The after-treatment of cases of spreading peritonitis is of the greatest importance, and upon the faithfulness and the intelligence with which it is carried out the life of the patient depends. As a routine measure, the stomach is washed out thoroughly before the patient has left the operating table and one or more ounces of the saturated solution of Epsom salts is introduced through the tube and allowed to remain. The rectal tube is passed at the end of six hours and a simple enema or an enema of salt solution is given. Opium is not used.

For the discomfort, dyspnea and distress, due to abdominal distention and upward pressure upon the diaphragm, elevation of the head of the bed may give relief, or this, in connection with gastric lavage, will often tide the patient over the first few hours of suffering. Enemata at intervals of six hours are used as a routine measure for the first two or three days, and an attempt is made to secure a passage of gas or a movement within the first twenty-four hours. Persistent distention is combated by the stomach tube through which Epsom salts may occasionally be introduced, and by enemata of oxgall, repeated as may be necessary.

The possibility of early intestinal obstruction should always be remembered in these cases of persistent vomiting and in several such cases which have been under my notice an exploratory operation has revealed this condition, and relief obtained by removal of the obstruction, which is generally due to a band, volvulus, or kinking of the gut.

Of course, when the toxins are diluted by the saline irrigation and hurried into the blood stream, a tremendous strain is brought upon all of the excretory organs, and in those cases where the kidney function is badly impaired by previous disease, an important avenue of elimination is at once removed and the patient frequently succumbs. Three cases of this sort have come within my own experience and all have died.

In one of the series of cases herein reported, secondary collections of pus formed during convalescence and required two later operations. The same complication has been observed by the writer in four or more other cases not reported in this paper.

In each instance, however, this probably could not have been prevented by gauze packing or drainage since in these very cases the additional exposure and handling would, in the opinion of the writer, have been sufficient to destroy all prospect of recovery, which eventually took place in every case, after one or more additional operations. It has been noted also that intestinal obstruction has occurred in several cases under the

same conditions and while it had formerly been my belief that most of these cases are caused by wide gauze packing between intestinal coils, I am forced to the conclusion that the condition perhaps quite often occurs in cases where no gauze drainage has been employed and is due then rather to the extent, character and intensity of the original peritonitis.

Eight cases of this complication have come under my care, and in seven recovery has taken place. The fatal case was one of very early obstruction with advancing peritonitis and sepsis which was uncontrolled by operation. Four of these cases formed the basis of a paper read by me before the N. Y. Surgical Society in 1901. In reviewing the cases of spreading peritonitis herein reported, attention is called to the fact that the term is applied only to those cases in which free purulent fluid was found in the peritoneal cavity. I agree entirely with Blake in his statement that the classification of purulent peritonitis, based upon the specific nature of the bacterial invasion, is not so important, from a practical standpoint, as that based upon the progress and extent of involvement of the peritoneum. It will be found on looking over the histories of the fifteen cases of spreading peritonitis which form the basis of this paper, that the extent of the peritoneal involvement varies rather widely. In five, which may fairly be classed as cases of diffuse peritonitis, the limits of the inflammatory process were not definable.

In four, as where the operation was done earlier, the peritonitis though more or less extensive had fairly definable limits; while in six, the pus was practically limited to the pelvis and right lower abdomen. These latter are the simpler cases and should have, ordinarily, a lower percentage of mortality. It should be noticed also that the appendix was removed in every case. This I have found easier to accomplish with growing experience in the cultivation of the sense of touch in locating and freeing the organ.

It is surprising how much can be accomplished in this matter through a comparatively small incision, and with what very little traumatism to the adjacent intestines. Upon this method of procedure, in fact, the writer has come largely to rely for the performance of rapid and effective work, and regards it as a most important factor in the technic of the operation.

In conclusion the writer wishes expressly to disclaim any originality of method or to intimate that there is anything remarkable in his results. The series of consecutive cases which are used have been taken from the records of a single hospital, where fairly uniform conditions prevailed. During this same period, however, similar methods have been constantly employed in other hospitals and in private work with increasing confidence, and the writer has every reason to feel strengthened in his position with widening experience.

The good results, may, in a measure, be due to the fact that all the patients were young, or at least comparatively so. All but three were males. Seven were twelve years or under, five were between eighteen and thirty years, two were thirty-eight years and one forty-one years old, a general average of 15.4 years.

One of the facts which has most impressed the writer, is the shortening of the period of hospital treatment. In the 23 cases operated upon in 1902, for example, the average duration of hospital care was twenty days, and all of these cases, except two interval operations, were acute, and most of them gangrenous or suppurative. The average duration of hospital treatment in the 15 cases of spreading peritonitis, excluding the second period of the second case which was readmitted and operated upon a second time, was 24¼ days. That is to say, the length of hospital treatment in these latter cases is nearly three weeks less than when the wider incisions, the gauze packing and drainage were in vogue. This feature alone, is one of the greatest economic importance both to the patient and to the hospital.

REPORTS OF CASES.

Case I. Gangrenous Appendicitis. Spreading Suppurative Peritonitis.—Wm. E., eight years of age; admitted Feb. 20, 1899. Attack one year ago, occasional attacks of pain since. Acute sudden seizure twenty-four hours ago. Examination: General tenderness, rigidity, no mass. Temperature 101.6° F., pulse, 100; respiration, 30. Immediate operation.

Operation.—Incision, McBurney's over appendix. Free pus escaped on opening peritoneum, wound extended through posterior sheath of rectus. Partial evisceration. Appendix four inches long, perforated, gangrenous, with stricture near base and containing fecal concretions. Ligated and removed; field cleaned with hydrogen peroxide solution and flushed with decinormal salt solution. Pelvis, which was filled with free pus, washed clear with saline solution, left side of peritoneal cavity showed serous fluid only. Peritoneal cavity flushed with hot saline solution, cigarette drains of gauze wrapped in rubber tissue inserted. One to the under surface of the right lobe of the liver, another into the pelvis and a third to the appendical site. Upper and lower drains removed next day. Feb. 22, appendicular drain pulled out, discharge foul odor. Wound sutures cut and a drainage tube inserted. Tube removed Feb. 26, wound rapidly cleaned, patient discharged cured March 23, 1899. Thirty-one days.

Case II. Gangrenous Appendicitis. Spreading Peritonitis. Secondary Abscess. Secondary Operations. Subphrenic Abscess.—Male, eleven years of age; admitted April 3, 1899. First attack—one week duration—acute onset—after fall upon abdomen. Examination: Abdomen generally distended, condition very bad. Temperature 101° F., pulse 128.

Operation by Dr. Le Boutillier in my absence. Oblique incision revealed large amount of free pus in peritoneal cavity, a localized abscess about

the appendix, and the pelvic cavity filled with foul-smelling pus. Appendix about three inches long, gangrenous, perforated, and containing fecal concretions. Ligated and removed. After cleansing pelvic cavity with hydrogen peroxide and flushing clean with hot saline, the general peritoneal cavity was flushed with hot salt solution and the wound closed after inserting two cigarette drains passing to the pelvis and appendical site. Profound shock, free stimulation.

April 5, delirious; temperature 102° F., pulse 140. April 6, better; wicks removed, bowels moved in response to enemata. Slow, steady improvement after this, up to April 16, when temperature began to rise without any apparent reason from condition of wound and without local signs within abdomen. April 30, temperature still elevated. Passed under the care of colleague by whom he was discharged April 26, somewhat improved, but still in poor condition and having a daily rise of temperature. Readmitted May 30, complaining of increasing pain in right side and with a swelling under free edge of right ribs. Temperature 103° F., pulse 140; respiration 126.

May 31, 1899, operation by Dr. Parker. Small incision into abscess, wound packed with gauze. Temperature fell, did well for a time, but evidence of retention of pus occurring, a second operation was performed by Dr. Le Boutillier. A large subphrenic abscess was thoroughly explored and drained. Wound closed by granulation and patient was discharged cured July 26, 1899.

Case III. Gangrenous Appendicitis. Spreading Suppurative Peritonitis. Intestinal Obstruction, Third Week. Operation. Recovery.—Male, twenty-six years old; admitted Feb. 5, 1890. Acute onset; sixth day of disease. Abdominal distention appeared, and patient looked very ill, skin cool and clammy, face pinched and somewhat cyanotic. Sent at once to hospital in ambulance, and operated upon as soon as preparations could be made. Temperature 99.4° F.; pulse, 84; respiration, 40.

Examination.—Abdomen rather distended and generally tender. Operation.—Oblique incision over appendical site reveals free thin pus, filling the pelvis and lower abdomen. Appendix long, angulated, two fecal concretions at end, and an area of gangrene with a small perforation near the middle. Cigarette drain to pelvis and appendical site, after thorough flushing of peritoneum with hot saline solution. Wound loosely sutured. Feb. 6, distention continues but high enema brings away gas and gives relief; Feb. 7, vomited; distinct fecal odor to the vomit. Stomach washed out and one ounce of saturated solution of Epsom salts left in the stomach by the tube, a high oxgall enema given later brought away gas; Feb. 8, distention somewhat less, wick drains removed, enemata continued. Convalescence uninterrupted until Feb. 21, when, sitting up in bed and taking solid food he began to have cramps and the next day vomited considerably. Feb. 24, obstruction complete, vomiting becoming fecal.

February 24, operation; stomach first washed out and median laparotomy performed; a band of adherent omentum constricting a loop of small intestine was found and divided. The peritoneal cavity was washed with hot saline solution of which a considerable quantity was allowed to remain, and the wound was closed. Immediate improvement and uninterrupted convalescence, discharged cured March 19, 1900. Forty-two days.

Case IV. Perforative Appendicitis. Spreading Peritonitis.—Male, aged thirty-eight years; admitted March 21, 1900. Several preceding mild attacks. Present seizure, acute and of twenty-four hours' duration. Examination, abdomen slightly distended, rigidity and tenderness, no tumor. Immediate operation.

Operation.—McBurney's incision, enlarged by extension through posterior sheath of rectus. Free thin pus in peritoneum. Appendix small with perforation near its middle. Excised and stump invaginated by purse-string suture. Pelvis found filled with thin pus and the intestines in the lower segment of abdomen were conjested and bathed in same. There was no fibrin present. After cleansing the principal infection focus with hydrogen peroxide and saline solution the lower portion of the abdominal cavity and pelvis was flushed with the hot salt normal saline, and a cigarette drain passed to the bottom of the pelvis. Loose suture of wound to the drain.

March 22, drain removed, stomach washed out, and a saturated solution of Epsom salts introduced through tube and left. Distention grew less and the convalescence though somewhat complicated by a moderately severe bronchitis, was, after the first forty-eight hours, uneventful. Patient discharged from hospital cured, April 7, 1900. Seventeen days.

Case V. Acute Gangrenous Appendicitis. Spreading Peritonitis.—Male, aged twelve years; admitted April 1, 1900. Indefinite history of mild attacks during the past year. Present seizure acute, with chill on day of admission. Examination general abdominal tenderness, no tumor. Temperature 102° F.; pulse, 96; respiration, 20. Immediate operation 10 P.M.

Operation.—McBurney incision. Free escape of thin, yellow free pus on opening peritoneum. Appendix lying to the inner side of cecum is five inches long, coiled spirally up on itself, no perforation. Lumen contains one large and several smaller concretions. Mucosa of tip and middle, gangrenous, proximal end of appendix normal. No limiting adhesions. Appendical region disinfected with hydrogen peroxide and flushed with saline solution. Appendix excised and stump turned in by purse-string suture. Wound loosely closed to small cigarette drain which passed to pelvis. April 3, 1900, wick out; April 5, suture out. Mild external wound infection. Discharged cured, April 20, 1900. Eighteen days.

Case VI. Gangrenous Appendicitis. Spreading Peritonitis.—Male, five years old; admitted April 22, 1900. First attack, sick one week.

Slight abdominal distention, rigidity, and tender mass in right side, condition poor. Temperature 100° F.; pulse, 120; respiration, 28.

Operation.—April 22; McBurney incision, later extended upward. Large abscess extending upward to the liver; pelvis also full of pus. Appendix retrocecal and adherent, four inches long; large perforation, gangrenous throughout, large concretions and free pus in lumen. Stump ligated and cauterized. Abscess, washed out with hydrogen peroxide and flushed freely with hot salt solution. Three cigarette drains; one to pelvis, one to under surface of liver and a third to appendical site. Convalescence uneventful, the usual moderate wound infection occurred, and healing by granulation. Discharged cured May 27, 1900. Thirty-five days.

Case VII. Gangrenous Appendicitis. Spreading Peritonitis.—Male, thirty-eight years old; admitted August 2, 1900. Sudden onset two days before, with pain and vomiting. Next day pain general, and more severe. Temperature said to have been normal. Examination. Patient enormously fat, looked very ill; pain and tenderness over appendical region; some abdominal distention. Temperature, 102.4° F.; pulse, 100; respiration, 28.

Operation.—August 2, 10 P.M. Long oblique incision on account of fat abdominal wall. Foul smelling free pus on opening peritoneum, abscess cavity about appendix extended to brim of pelvis. The appendix lay to inner side of cecum, four inches long, and entirely gangrenous. Contents, foul pus and fecal concretions. Excised stump inverted by purse-string suture. Field disinfected with hydrogen peroxide and flushed with salt solution; cigarette drains. Convalescence uneventful, moderate wound infection, healing by granulation. Discharged August 30, 1900, with very small granulating wound. Twenty-seven days.

Case VIII. Gangrenous Appendicitis Abscess Spreading Peritonitis.—Female, aged twenty-five years; admitted January 24, 1901. First attack two years ago. Duration of present illness about eighteen hours. Acute onset. Examination. Slight rigidity and some general tenderness. Temperature, 99.4° F.; pulse, 106.

Operation.—Jan. 25, 1901; McBurney incision, abscess opened and about two ounces of foul-smelling pus evacuated. Abscess cavity washed out with hydrogen peroxide and saline, the appendix removed, and its stump inverted by Lembert sutures. The pelvis also contained a large quantity of free pus. This was washed out with saline and a small drainage wick was introduced, also one to the appendical site. Appendix three inches long; gangrenous at its distal end and perforated. Wound closed to drain, which was removed in about thirty-six hours, and patient discharged cured Feb. 24, 1901. Thirty days.

Case IX. Acute Appendicitis. Spreading Peritonitis.—Male, eighteen years old; admitted March 5, 1901. Acute seizure same day. Patient looked very ill, some general and marked local tenderness, no tumor. Temperature, 104° F.; pulse, 100; respiration, 28. Second attack. Immediate operation 10:30 P.M.

Operation.—McBurney incision, free seropus escaped on opening the peritoneum and the pelvis and lower abdomen found to contain a considerable quantity of the same. Appendix removed and stump invaginated by a purse-string suture. Peritoneal cavity flushed with hot saline solution. Wick drain to pelvis and one to appendical site. Appendix four inches long, stricture at proximal one-third perforation at point distal to this with feces escaping. Section reveals mucosa showing spots of superficial ulceration and a gangrenous area involving the whole thickness of wall at point of perforation. Wicks removed in thirty-six hours; usual wound infection occurred; convalescence uneventful. Discharged as cured April 2, 1901. Twenty-seven days.

Case X. Perforated Appendicitis. Spreading Peritonitis.—Male, aged five years; admitted March 15, 1901. First attack, acute seizure, twenty-four hours' duration. Examination. Slight distention, some rigidity, tenderness general, but more marked in the left iliac region. Temperature, 101° F.; pulse, 120; respiration 40. Looked very sick, removed at once to the hospital and operated upon at 9:30 P.M., same day of admission.

Operation.—McBurney incision, free seropus in peritoneal cavity. Appendix four inches long, and extending nearly horizontally across the abdomen and with its free end to the left of median line. Perforation one-half inch from tip, excised and stump invaginated by purse-string suture. Peritoneal cavity from beneath the liver to the pelvis flushed with hot saline solution and the wound closed to a small wick drain extending to the bottom of the pelvis. There were small flecks of fibrin on the intestines, but no limiting adhesions, while seropus was pretty well distributed through lower abdominal cavity. The distention yielded to saline cathartics and enemata and the recovery was uneventful, moderate external wound infection. Healing by granulation, discharged as cured April 5, 1901. Twenty-one days.

Case XI. Acute Non-perforative Appendicitis. Spreading Peritonitis.—Male, aged forty-one years; admitted March 30, 1901. Abdominal discomfort for past six weeks, acute seizure thirty-six hours' duration. Examination.—Rigidity, general tenderness, slight distention, no distinct tumor. Temperature, 102° F.; pulse, 134; respiration, 32.

Operation.—March 31, 1901. McBurney incision enlarged by extension through posterior rectus sheath. Free pus in peritoneal cavity; intestines congested and somewhat distended. Cecum very movable and entirely covered by peritoneum. Appendix to inner side, sharply angulated in the middle, and extending nearly over to the middle line; 4½ inches long, congested and filled with soft feces. Mucosa echymotic, no ulceration, or perforation. April 1,

wick removed; April 10, wound healed; April 14, discharged cured. Fifteen days.

Case XII. Gangrenous Appendicitis. Spreading Peritonitis.—Female, aged eleven years; admitted January 20, 1902. Forty-eight hours' duration, acute sudden onset. Examination.—Marked tenderness, no tumor. Temperature, 102° F.; pulse, 100; respiration, 25. Looked very ill.

Operation, same day. Oblique incision 3½ inches long, through muscles. Free pus in peritoneum, creamy, foul-smelling and thick. Appendix nearly four inches long, extending to pelvis; gangrenous area with small perforation. Excised and stump invaginated, two wick drains. Some pain and distention after operation, required frequent enemata. External wound infected but rapidly cleaned up. Patient discharged as cured February 23, 1902. Thirty-four days.

Case XIII. Gangrenous Appendicitis. Spreading Peritonitis.—Male, aged twenty years; admitted February 15, 1902. First attack, fourth day, acute onset, very tender, good-sized mass. Temperature, 102.4° F.; pulse, 110; respiration, 24.

Operation same day. Oblique incision, large abscess evacuated and the appendix, the distal end of which was gangrenous but not perforated, was removed and the stump invaginated in the usual manner, after the usual washing with hydrogen peroxide, followed by saline. The pelvic cavity contained a large amount of pus and considerable free seropurulent fluid was present in the lower abdomen and a few strings of recent fibrin on intestines. Peritoneal cavity and pelvis flushed with hot saline solution. Peritoneum closed to two small wick drains extending to pelvis and appendical site. External wounds partially closed. Patient in bad condition, saline infusion and free stimulation required. Feb. 17, still vomiting, but condition materially improved, drains removed; Feb. 18, delirious all night; April 24, in typhoid state, wound foul; Widal test, negative. March 2, wound cleaned, much improved; March 12, sitting up; March 16, discharged cured. Twenty-nine days.

Case XIV. Gangrenous Appendicitis. Spreading Peritonitis.—Female, aged twenty-seven years; admitted March 8, 1902. First attack, acute onset, previous morning. Some distention, fairly rigid, more or less general tenderness; no distinct tumor. Temperature, 101° F.; pulse, 120.

Operation same day. McBurney incision. General peritoneal cavity full of thin, turbid, greenish-yellow fluid, large flakes of fibrin. Appendix removed, stump invaginated and wick drain inserted to site. The appendix was gangrenous and perforated. After flushing the peritoneal cavity with salt solution and suturing the abdominal wound, the stomach was washed out, and one ounce of saturated solution of Epsom salts was introduced through the stomach tube. March 9, wick withdrawn. Bowels moved and patient doing well. Moderate wound infection, healing by granulation; wound clean by March 20 and strapped. Discharged as cured March 21, 1902. Thirteen days.

Case XV. Gangrenous Appendicitis. Spreading Peritonitis.—Male, aged eleven years; admitted March 15, 1902. First attack, acute; sudden seizure that morning; frequent vomiting. General tenderness, both recti tense, especially the right, no tumor. Temperature, 101.8° F.; pulse, 140; respiration, 40.

Operation same day. McBurney incision. Large amount of free yellowish, turbid fluid in the abdominal cavity. Appendix short, swollen and its distal third gangrenous and perforated. Wick drain, partial closure of wound. Usual after-treatment. Wound healed by granulation, out of bed March 29. Discharged cured April 7, 1902. Twenty-three days.

PRIMARY MYOKYMIA; WITH REPORT OF A CASE.[1]

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MYOKYMIA is a disorder characterized by fibrillary and wave-like contractions of the individual fibers of various muscles of the body without locomotor effect. It is more than a simple fibrillary tremor, for the whole body of the muscle also undergoes rather slow wave-like contractions passing from one end to the other. The condition rarely occurs primarily. Usually it appears as a minor symptom; in diseases of toxic origin, such as lead and mercurial poisoning, etc., and after attacks of poliomyelitis. It is also seen in neurasthenia and in sciatica; and in diseases characterized by rapid bodily wasting. It may occur as in my case as the only morbid condition.

Myokymia is one of those types of spasm closely allied to and often identical with cases reported as paramyoclonus. Dana regards Friedreich's case of paramyoclonus multiplex as really belonging to this group. That it may exist in conjunction with a myoclonus is shown by Kny, who first reported this condition in 1888, under the term of *paramyoclonus fibrillaris multiplex.* Later, Schultz, in reporting a true case, gave it the name of *myokymie.* Giovanni Biancone gives the name *myokymie* to a special group of cases of myoclonus characterized by fibrillary contractions of the muscles, in which those of the face may participate. He states that in these cases, the electrical excitability of the muscles involved is sometimes increased, and there is always an unduly persistent contraction after the excitation has been discontinued. Paresthesia and paralgesia form part of the clinical picture of the group. According to Bastianelli, only five such cases are on record,—his own, Biancone's and others by King and Schultz.

This case which I am reporting would come within the group described by Biancone. Later cases reported by Williamson, Walton and Dana,

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bring up to thirteen, the number of cases in which myokymia is reported as the primary, dominant and most annoying symptom.

George P., aged twenty-eight years, single, native American, white, printer for fourteen years.

Family History.—The patient is one of five children; two brothers died in infancy; one uncle (mother's side) died of consumption, one cousin (also maternal) had chorea or epilepsy. Family history otherwise negative.

Previous History.—The patient does not remember having had any of the diseases of childhood, save mumps, which he had one year ago. Has had a moderate catarrh of nose and throat all his life. Suffered from fever and ague off and on, for two years, twelve years ago. No history of lead colic. Has always been interested in athletic exercises and pursued them to excess. Six years ago he rode the bicycle to excess. During two years he made 150 century runs, besides usual riding; also did cross-country running and played basket ball at night after work. Ten years ago, after taking part in a political parade, his legs pained him and he felt very tired. He has always been a great walker. He has never drunk to excess and never averages more than two drinks a week. Smokes a pipe considerably. Denies venereal diseases or excesses.

Present Illness.—About a year ago, after walking for eleven hours steadily, he noticed that the muscles in the calves of his legs twitched. This symptom has increased, and continued ever since. He both sees and feels the muscular twitching, and at night he can feel the sides of the face next to the pillow twitch. His forehead feels itchy at times. His legs seem heavy after walking a short distance, and also pain him. At times there are itchy or prickly feelings in them. His arms also get tired after moderate exertion. He states that his memory is not so good as formerly,—as he will forget to do things his superior tells him. He stands all day at his work. Otherwise, he feels well; there is no headache, no pain anywhere else. The appetite is good, the bowels regular. He has been in the country the past summer for a couple of months, and during this time has gained fourteen pounds.

Physical Examination.—Of rather slight build, but well nourished, figure regular. No anatomical stigmata of degeneration. Has some pes planus. Lungs negative. Heart normal in size and action; there is a faint mitral systolic murmur transmitted only to the anterior axillary line. Pulse normal frequency, no arterial thickening. There is no evidence of congestion in feet and hands. Liver and spleen apparently normal. Urinary examination shows few crystals uric acid, otherwise normal. Thyroid small.

Examination of Nervous System.—Gait and station normal. There is no paralysis or paresis of muscles. Facial innervation more marked on right side. Moderate tremor of hands. There is a fibrillary twitching of all the muscles of the legs and the posterior muscles of the thigh. The adductors and the quadriceps are not involved. This phenomenon consists of a constantly recurring contraction of muscular bundles, sometimes the same bundle contracting once, more often several times. The distribution of the muscles affected is symmetrical. These fibrillary contractions occur in every visible portion of the muscle, and evidently take place throughout the entire muscle substance. They involve sometimes a small bundle of the muscle, and sometimes a larger one. I have never seen the contraction of a bundle wider than half an inch, but I have noticed the contraction of a narrow bundle running through the entire length of the gastrocnemius. Contractions may occur in different parts of the muscle at the same time. The rapidity of the contractions varies considerably; occasionally they are slow and worm-like—other times sharp and quick. The strength varies likewise. The movements are more marked when the muscle is in an active state, for instance when the patient is standing. He is conscious of these contractions and this constitutes his reason for coming for treatment.

A sharp blow on these muscles brings out a marked contraction of a bundle, often followed by several others. There is no atrophy. The electrical reactions are negative. There is no objective disturbance of sensation. Pupils large, react well to light, distance, ciliospinal and consensual. No limitation of field of vision. No disturbance of ocular motility. Fundus normal. No disturbance of smell, taste, or hearing. Superficial reflexes undisturbed. Deep reflexes—jaw-jerk increased, elbow and wrist normal. Knee-jerks increased; ankle-jerk normal. No clonus. No Babinski. The patient has been under observation for a year, during which time the contractions have persisted in the same manner as described, though now both quadriceps are involved, and the contractions are more frequent and more marked in the thigh muscles than before, the extent and character of the contraction in the calves remaining about the same. The size of the legs remains the same; the patient also states that he has noticed no diminution in their size since the onset.

The patient has been under increasing doses of strychnine, up to gr. $^1/_{15}$ t.i.d.; arsenic in increasing doses, up to ♏xv, t.i.d. Specific treatment, bromides, chloral, galvanism, exposure of spinal column to X-ray, conium, gelsemium and tonics—all with no beneficial effect, save that a combination of conium and gelsemium reduced the contractions to a marked degree for a time.

Of the cases previously reported, all save two have been among the laboring class, and these two had poliomyelitis in childhood and undoubtedly used the muscles not involved to excess in compensation for the weakness of the others—as in Walton's case it began in the unaffected muscles of the extremity which was affected by the poliomyelitis; in my case it was an athlete, and in two cases it followed or accompanied lead poisoning. In one it followed sciatica, and I have seen it in a case of sciatica not reported.

All these cases were males, ages running from

twenty-one to seventy-one years. In two of the cases the legs only were affected; in the remainder, the legs and arms or legs and entire muscular system, excepting in one instance, the hands, and in another, the face and neck. In Kny's case, as already stated, it was associated with myoclonus; in Dana's with myoclonus and myotonus. Painful cramps have appeared in some of the cases. None show atrophy of the muscles, or much disturbance of the general health.

Nearly all complain of general pains, indefinite in character, and also of becoming easily tired. Four cases were cured, and one improved by rest, galvanism, and warm baths. Of the pathology nothing is known. As I have said, nearly all the cases occurred among men who used their muscular system excessively. Acute congestions, poisons, or exhaustive hemorrhages also may produce results, varying according to the extent and duration of the morbid influence and the vitality of the nerve cells, from a myospasm to a poliomyelitis or an amyotrophic lateral sclerosis; from disturbance of the cell to its death. In this case, the excessive work put upon the spinal motor neurons has led to a chronic functional disturbance, shown by slight irregular discharges.

I believe the contractions are due, in this case, to a perversion of the normal efferent impulses, which are constantly passing to a muscle to preserve its normal tone, and that the cause of this perversion is due to some disturbance of the peripheral motor neuron. That it is not due to the nerves which conduct the afferent impulses from the muscle is shown by the fact that mechanical stimuli, which call for a contraction of the entire muscle, are responded to naturally, also other afferent impulses; the sensory vasomotor and trophic nerves are not disturbed. That there is no disturbance in the muscle itself, is shown by the lack of any nutritional change, and the fact that the entire muscle contracts naturally, both to electrical and voluntary movements. That this perversion is not due to a disturbance in the action of the sensory cells, but rather to the motor cells, is shown by the absence of any characteristic sensory symptom, and to the etiology which is one of the excessive use of the motor neuron.

This perversion is probably of a functional character, and due to a disturbance in the action of the cell.

The myoclonias or more or less generalized clonic spasms may be grouped as follows:

1. Peripheral myoclonus (including paramyoclonus of Friedreich, and fibrillary myoclonus of Kny) or myokymia.
2. Hysterical myoclonus (including some cases reported as paramyoclonus multiplex).
3. Cortical myoclonus, or convulsivetic.
4. Degenerative myoclonus or myoclonus-epilepsy or family myoclonus.
5. Chorea.

Groups 4 and 5 are closely related.

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DIAGNOSIS AND TREATMENT OF INTERNAL HEMORRHOIDS.[1]

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INTERNAL hemorrhoids may be defined as varicosities of the middle and superior hemorrhoidal veins, sometimes associated with eversion of the rectal mucous membrane. There is always more or less pain and tenderness with discomfort in sitting. Allingham describes three varieties of internal hemorrhoids: capillary, arterial and venous.

The capillary hemorrhoid is small, and is composed of the terminal branches of the arteries and veins and of the capillaries which join them. The capillary hemorrhoid never protrudes through the anus. It is covered by a delicate thin membrane and this accounts for the free bleeding which follows the slightest injury of its surface by the passage of hardened feces during the act of defecation. To this form of hemorrhoid the name bleeding piles may properly be applied. Some authors refer to this form of piles as the first stage of hemorrhoidal development.

An arterial hemorrhoid is of considerable size and consists of a tumor of freely anastomosing arteries which are tortuous and dilated and bound together by connective tissue. Such a tumor is firm to the touch and is liable to inflammation, erosion, hemorrhage and protrusion through the anal orifice during defecation, returning spontaneously into the bowel after the act has been completed.

This form of hemorrhoid is the result of repeated attacks of inflammation (irritation) of the capillary form of hemorrhoid which causes an increase in the submucous tissue. I shall refer to this form as the second stage of hemorrhoidal development.

The venous hemorrhoid consists of a mass of large dilated veins, beneath the mucous membrane of the rectum. Repeated irritation leads to hypertrophy and induration of the mucous membrane and submucous connective tissue and a large bluish tumor is formed, which protrudes during defecation or the protrusion may be continuous if the patient is not in the recumbent position. This stage is spoken of as the third stage of hemorrhoidal development.

The diagnosis of this most common and distressing malady is not difficult, although errors in diagnosis are of more frequent occurrence than is generally supposed by physicians who do little

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rectal work. Internal hemorrhoids are likely to be confounded with cancer of the rectum, polypus and prolapse of the rectum, because these conditions are likewise accompanied by hemorrhage, pain, protrusion at the anus and a discharge of mucus.

Errors are particularly liable to occur in diagnosing the disease, as met with in children because prolapse and polypus of the rectum are not uncommon affections in children and these diseases present some resemblance to internal hemorrhoids. It is true that internal hemorrhoids is a very rare affection in childhood, but cases have been reported by Allingham, Ball and others. My own experience has been limited to two cases occurring in children whose ages were five and nine years respectively.

The symptoms of a prolapsed and congested polypus are very similar to those of internal piles, consisting of a protrusion at the anus and occasional bleeding at the act of defecation but a careful digital examination will disclose the presence of the pedicle to which the growth is attached. Prolapsus of the rectum is easily distinguished from piles by the characteristic appearance of a reddish-purple mass with its depressed central orifice and the annular fold of tissue around the whole anus. The differential diagnosis between malignant growth and hemorrhoidal tumors is an easy matter, as the hard nodules on the side of the rectal wall with its comparatively firm structure, and surrounding induration can readily be detected on a digital exploration. The following cases, selected from a number of those which I saw confused with internal piles, will demonstrate the fact that a wrong diagnosis is often made:

Case I.—In March, 1903, a woman aged seventy years consulted me for what she thought to be bleeding piles. Her history was as follows: In April, 1902, she had an attack of diarrhea associated with rectal hemorrhages during the act of defecation. She consulted her physician who diagnosed her case as internal piles and prescribed ointments to be used locally, and internally some medicine to check peristalsis. She did not improve under this treatment but grew worse every day. When I saw her she complained of a constant desire to evacuate her bowels, but when at stool she passed nothing except blood and mucus. She said, she felt as if her bowels were never unloaded, and the excessive straining caused a sharp pain in the rectum.

I placed the patient in the right lateral and semi-prone position and introduced my index finger into the rectum in search of the cause of her ailment. Sweeping the finger around the walls of the first three inches of the rectum, I found nothing to account for her symptoms. Introducing a speculum in order to see whether there were any erosions or ulcerated areas, which may give rise to this bleeding, I found the lower portion of the rectum very much congested but no lesions were visible. Not being satisfied with the result of my examination, I requested the patient to stand up and I examined her in the erect position. While the patient was straining as much as possible, I again introduced my finger to its full length when the tip of my finger came in contact with a malignant stricture about four inches above the anus.

Case II.—A boy, eleven years old, was referred to me by his physician for a rectal examination. The history obtained from the mother was as follows: For over two years the boy suffered with tenesmus, diarrhea and at times passed blood and mucus from the rectum. Occasionally a bright-red mass would protrude from the anus and cause pain. He was treated by a number of physicians for internal hemorrhoids but failed to get relief. A digital exploration of the rectum revealed the presence of a polypus.

From what has been said it is obvious that the importance of a correct diagnosis of internal hemorrhoids cannot be overestimated. In the second and third stage of hemorrhoidal disease, when the piles protrude through the anal orifice and when they either return spontaneously into the bowel after defecation or protrude constantly, a careful examination will readily disclose the nature of the trouble. The pile tumors can then not only be seen as a dark blue mass, but they can also be felt between the fingers as a circumscribed and distinct tumor, being partly hard and partly soft, with a strict contiguity between the piles and bowel.

The difficulty in diagnosis arises in the early stage of hemorrhoidal development when there is no external evidence of internal piles, and bleeding is the only symptom present. Also when hemorrhoids are complicated with a fissure or an ulcer of the rectum, the spasmodic contraction of the sphincters is so great that the piles are not prolapsed, though they may bleed freely with each action of the bowels.

In such cases an examination should be made immediately after the rectum has been emptied by an enema, when the bearing-down efforts and water causes the hemorrhoids to protrude, enabling us thereby to determine the number and size of the tumors we have to deal with.

In woman piles may be brought plainly into view by everting the anus with two fingers introduced into the vagina and pressing upon its posterior wall. An examination in a case of internal hemorrhoids should never be terminated at the evidence of hemorrhoidal tumors, for it often happens that higher up a stricture exists which manifests no other signs of its presence except the hemorrhoids.

In outlining a rational method of treatment for internal hemorrhoids, it is necessary to bear in mind the etiological factors and pathology underlying this condition. We must remember the effects of the various causes of piles, whether the result of pressure as in constipation, foreign bodies in the rectum, retroversion of uterus, pregnancy or whether it is caused by reason of straining during micturition as in enlarged prostate and stricture of the urethra.

All these conditions lead first to a varicose condition of the veins and impediment of the return flow of venous blood and later to an increase in the blood vessels and proliferation of connective tissue.[1]

The belief that permanent cures cannot be effected with palliative measures or local treatment is surely true in the third stage of hemorrhoidal development, when we have to deal with a firm, hard, fibrous tumor. This, however, is not true in the first and second stage of hemorrhoidal formation. Here palliative measures should always be tried, and when skilfully and scientifically executed, we will not only relieve or soothe the symptoms of the disease without curing it, but by the alleviation of the existing cause and the employment of palliative measures we render an operation quite unnecessary. The dictum calling for the removal of the cause before treatment ensues is equally applicable to this affection.

Internal hemorrhoids secondary to stricture of the urethra, enlarged prostate, vesical calculus, pregnancy or neoplasm will completely disappear when these affections are cured. Knowing that constipation is the most common cause of internal hemorrhoids, we should first direct our attention to this condition and attempt to secure at least one daily evacuation of the bowels. This can often be accomplished without medicine by a change from a sedentary habit to active outdoor life and the avoidance of everything which tends to produce constipation. The diet should be regulated by eliminating from it all substances which tend to constipate the patient's bowels.

Highly seasoned meats, rice, cheese and potatoes, alcoholic drinks and the excessive use of tobacco, should be strictly prohibited.

If the prophylactic and dietetic measures are not sufficient to obtain a daily evacuation of the bowels, we have to resort to medicinal or local treatment. Mild aperients in the form of a mineral water in the morning, or a dose of cascara at night in addition to gentle massage of the sphincters with the finger, will be found very effective. The injection of two ounces of olive oil at bedtime and its retention over night is extremely beneficial, not alone because it softens the feces and facilitates its expulsion, but because it also prevents hemorrhage. The softening of the feces prevents the cohesion of scybala which invariably causes engorgement of the hemorrhoidal veins and the surface of the pile is not abraded by the passage of a hard fecal mass during defecation.

In cases of obstinate constipation, saline cathartics are indicated: drastics, however, should not be used. Hemorrhage is most efficiently relieved by the use of astringents and cold. The best astringent in these cases is cold water. After each passage, the bowel should be injected with cold water. A suppository of ten grains of tannic acid is also very efficient. When the hemorrhage is profuse, every mechanical means should be exhausted in determining the exact location of the bleeding point.

With our modern method of distending and illuminating the rectum, the bleeding point should be located before any effort at packing the rectum or hemostatics are employed for checking the hemorrhage. When the hemorrhage is the result of a general oozing from the surface of the piles, a single application of nitric acid or carbolic acid will often stop it forever; cauterization may also be made with the Paquelin cautery point, which is still more reliable. The application of these chemical caustics is not painful, and the beneficial results obtained so satisfactory that a trial of this procedure in controlling hemorrhage from capillary oozing from small vessels is, I believe, worthy of consideration.

Hemorrhage from a spurting vessel on the surface of one pile can readily be stopped by the application of a silk ligature to the bleeding point. This can be done without an anesthetic. Following the application of the ligature, the bowels should be confined for three days, after which time a cathartic is given to secure a daily natural evacuation afterward.

The injection of a moderately strong solution of carbolic into the center of the pile, results in a hardening and diminution in the size of the hemorrhoid. This atrophy of the tumor is produced by the inflammatory induration following the injection and by the subsequent cutting off of the circulation to the tumor.

The solution I employ is one part of pure carbolic acid to two parts of glycerin and two parts of water. The amount I inject into the hemorrhoid ranges between five and ten drops, depending upon the size of the tumor. I inject two and sometimes three tumors at a time, but I think the novice does better by injecting only one at a sitting. The injection may be repeated after the lapse of one week. When the injection is properly and skilfully performed, there is very litte pain following it, and the results are very gratifying. There is a gradual decrease in the size of the tumor, and in a few weeks the prolapse disappears and with it the bleeding, pain and discomfort. By this method, under the head of the palliative treatment, I am satisfied that I obtained complete cures in over 30 cases.

I do not advocate this method in preference to the radical cure by operation, but I often resort to it when patients refuse the surgical operation. The practical advantages of this plan of treatment may be summed up as follows: The patient is not frightened by the use of a knife, it is painless when properly performed, and it does not detain the patient from business. I believe that with the proper antiseptic precautions there is no danger of sepsis, abscess formation or sloughing.

Regarding the permanency of the cure, it may be said that after the exciting cause is removed

[1] The treatment of internal hemorrhoids is generally considered under two heads: First, palliative; second, radical cure by operation. A large majority of sufferers from internal hemorrhoids will not submit to a radical cure in spite of the advantages and the safety and facility with which it may be accomplished.

In my experience, comprising both private and hospital practice, three out of five object to the use of the knife and general anesthetic. It is, therefore, of paramount importance to know what can be done for such patients without any surgical interference.

and the prophylactic measures are successfully carried out there may be no recurrence of the trouble. I have seen cases of recurrence following the clamp and cautery and the ligature operation if the preventive measures have not been adhered to. Piles should not be injected when highly inflamed, when external, strangulated or when ulcerated. We may at any time be called upon to treat a case of strangulated piles and the condition is an extremely painful one. We usually find a mass of piles, swollen, congested and edematous which are tightly constricted by the external sphincter. The pain is so severe that a large majority of patients will readily submit to an operation, which should be performed at once. If an operation is refused, lead-water and laudanum lotion applied ice-cold, affords great relief, and so reduces the edematous swelling that the piles may be replaced. Their reduction by taxis requires much care and judgment. After anointing the mass with vaseline one finger is gently introduced into the anus and the other fingers press the tumors one by one within the bowel. This, if possible, should be done under the influence of an anesthetic, for the maneuver is a very painful one and the reduction is sometimes impossible without an anesthetic. Under the use of cold and sedative applications and rest, the condition will subside in forty-eight hours, when the patient is able to effect a reduction himself.

The operative treatment is the safest, as it does not require much time to bring about a radical cure. It is the intention of the writer to only refer briefly to some of the numerous methods of operation for internal hemorrhoids. Of all the various operative procedures I prefer the ligature or Salmon's operation. This operation can be performed in a short time and is accompanied by very little bleeding. There is no risk of hemorrhage if the ligature has been tied tightly and the loss of healthy mucous membrane can more easily be prevented by including only the pile in the ligature. And the period of convalescence is short, as a rule from two to three weeks. If the operation has been properly performed there will be no recurrence of the piles. This operation can be performed with fewer assistants than any other operation adopted for the operative cure of hemorrhoids. I will not weary you with a detail description of the various steps followed in applying the ligature as the procedure is known to all of us. I only wish to state that I do not cut off the pile after the ligature is tied unless a pile happens to be very large. After the piles are tied, I replace them within the bowel. I finally insert into the rectum a firm piece of rubber tubing 3½ inches long and an inch in diameter, around which sterile absorbent cotton is wrapped. This is kept in place by placing a safety-pin through the outer end and into a T-bandage. This tube serves three purposes: First it allows the escape of flatus, which is the chief cause of the discomfort after the operation; second, through this tube possible bleeding can be detected; third, if after the third day a cathartic is administered and no action of the bowels is obtained, an enema can be given through the same tube. Immediately after recovery from the effects of the anesthetic, a powder composed of one-fourth grain of morphine and ten grains of bismuth should be administered every four hours for two days in succession. This is necessary to keep the bowels confined for about four days, at the end of which period they should be relieved by the administration of a laxative and, if necessary, an enema. The external dressing should be removed twenty-four hours after the operation and a fresh dressing should be put on every night and morning until the wounds are healed. The ligatures will ordinarily slough off in from eight to ten days. When this operation is properly performed there will be no considerable suffering following it, surely no more than after the clamp and cautery operation.

There is one other operation which has won for itself a very enviable reputation, and, I think, is the best after the ligature operation, and that is the operation by clamp and cautery or Henry Smith's procedure. Some surgeons claim that this operation is not followed by pain if care has been taken to avoid cauterizing the skin. I cannot agree with them, for I saw marked pain after it. The edema of the mucocutaneous tissues following this operation is very great.

Some time ago while demonstrating such a case to a number of physicians, I was asked why I did not remove all the piles, as they thought the edematous mass around the anus were piles. Such a condition is the cause of considerable suffering, and while this is not present in every case it occurs frequently enough to warrant the statement that this operation is just as often followed by pain as the ligature operation. It is furthermore claimed by the advocates of the cautery operation that the patients can be about in a few days and that they are not detained from business more than a week. I do not find this a safe procedure, because the wounds are not entirely healed by that time and the irritation produced by walking or straining while at work will lead to increased granulation and subsequently to the formation of a stricture. I have seen a number of such cases in patients who were permitted to attend to business one week after the operation, returning about four or five weeks later with marked stenosis. It is advisable to keep the patient under observation for three weeks, during which time he should not be permitted to exert himself in the least. The patient may be up and about in the room after a week or ten days, but should be in the recumbent position the greater part of the day.

I have already indicated my preference for the ligature operation and only wish to add that this treatment requires skilful supervision in order to be successful. But when successfully carried out it has yielded, in my observation, more satisfactory results than any other operation.

My experience in the treatment of internal hemorrhoids lead me to arrive to the following conclusions:

1. In the treatment it is important, in the first

place, to determine whether the disease is primary or secondary to some affection of the pelvic organs.

2. In the first stage of hemorrhoidal disease no operative treatment is indicated.

3. The true value of the non-operative treatment is frequently underestimated in the second stage of hemorrhoidal disease.

4. None but operative treatment should be resorted to in the third stage of hemorrhoidal disease.

OBSERVATIONS ON OBSTETRICS IN GENERAL PRACTICE.[1]

BY J. F. MCNULTY, M.D.,
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THE art of assisting women in childbirth in general country practice differs but little from the same function in private city practice.

The general practitioner is working at a disadvantage, as he is frequently called without a moment's notice, while the specialist has generally a line on his case during the whole period of gestation. The general practitioner is very frequently brought face to face with serious and alarming situations without notice, and quite often without sufficient preparation. The ability to cope successfully with what may be called emergency cases requires a cool head and rapid judgment. The physician must have the faculty of doing nothing at the wrong time, and the ability to act promptly at the right time.

We should constantly keep in mind the fact that meddlesome midwifery is poor midwifery. We are called simply because it may become necessary to assist nature in the expulsion of the products of conception, but with the distinct understanding and hope that our efforts will not be required.

1. We may become meddlesome by rupturing the membranes too soon. Show me a man who has a record for using the forceps, who, in fact, is forced to use them often, and I will show you a man who is a chronic premature rupturer of the amniotic sac. No branch of medical practice furnishes such positive evidence regarding the germ theory of disease.

2. We can become, and unfortunately do become, meddlesome, by introducing diseased germs into a very fine culture medium—the contents of the human uterus. By cleanliness and the strict attention to the details of antiseptic surgery much trouble may be avoided. I now have a case of puerperal fever, where the attending physician neglected to prescribe even a carbolic acid wash.

The attending physician should prepare as for a surgical operation in every instance. There should be no situation which would call for a hasty examination without first giving marked attention to the preparation of your hands. The obstetrical practitioner of to-day should always remember that he is, for the time being at least, a surgeon, when called upon to use any kind of instrument.

3. We can, and do, become meddlesome by neglect. Neglect to repair a laceration immediately. The gynecologists grow rich upon the neglect of the obstetrical practitioner. Nine women out of ten who consult for private trouble date their period of suffering from a particular confinement or a particular miscarriage. You have in a laceration a fresh wound. Sew it up; dress it surgically, and no trouble follows. If not sufficiently large to require a ligature, merely apply an antiseptic dressing instead of allowing it to ulcerate and become an avenue of infection.

Few persons die during an operation; few women die during delivery; but the effects resulting from operations and deliveries give us deaths by the thousands. Suppose the case of puerperal fever of which I spoke should die, or should recover and later develop pus tubes, and the removal of them should cause death, where should the primary cause of death be placed?

Neglected abrasions of the vaginal mucous membrane, slight lacerations of the cervix with more or less tearing of the pelvic floor, are, I believe, the primary causes of the major portion of female complaints.

We should see that the various organs after delivery are placed in the position which nature intended them to occupy. More tissue should be placed to support the uterus than just sufficient to afford covering for the contents of the rectum. We must answer for a great many prolapses, not because of what we have done, but of what we have left undone.

My old professor, Dr. Earl, of the College of Physicians and Surgeons, Chicago, was in the habit of saying: "Remember, boys, you cannot prevent a child from being born." The child will be born, as a rule, in spite of us, but it is very essential that we have at our finger tips the normal diameters of the pelvis and the fetal head; also the positions the fetal head may assume in passing through the parturient canal. These points are called the alphabet of obstetrics, and every physician should have a mental picture of the situation, no matter what position the child's head may be forced to assume. The ability to follow the fetal head properly and accurately comes only by painstaking observation.

How few of us endeavor to make out the various positions and mentally review the diameters while attending a case! I think it good practice to go over this old alphabet in every instance, no matter how normal it may be. Then when we come in contact with an abnormal situation, we at once recognize it, and can prepare to meet it promptly. If we find that natural efforts are not sufficient to meet the new conditions, and artificial aid is absolutely called for, then act without delay—giving ample time for thorough preparation, however.

Offer no excuse for using forceps. When indicated use them just as you would a certain drug if indicated in a given case. I was recently

[1] Read before the Custer County Medical Society, Broken Bow, Nebraska, February 9, 1904.

obliged to use forceps in a case where the membranes had ruptured two days previous to the beginning of actual labor pains. The mother was a large, healthy and strong woman, twenty-eight years of age, this being her second child. The occiput was found to be in the left posterior position. It failed to make the turn, and remained fixed. The patient became exhausted, and the natural efforts were such that it was evident artificial aid would be absolutely required. After thorough preparation the patient was chloroformed, forceps were placed in position, and the child delivered. By removing the forceps before the fetal head has passed over the perineum we avoid the lacerations which sometimes occur when delivery takes place with the forceps in position. I believe it is not good practice to endeavor to rotate the head of fetus with forceps in position, although we are at times advised to do so.

Upon making the usual call the next day I found patient to have a degree of fever. I frequently find a slight fever on second or third day, to which I pay no attention. There is a decided difference between the fever of sepsis and that of exhaustion or reaction. We may do harm by ordering vaginal injections in such cases. However, when the discharge is offensive, with fever or without, I invariably use vaginal douches. If no rapid and decided improvement takes place, irrigate the uterus, and in every case inspect cervix and vagina.

There is no class of cases where symptoms vary more widely than in premature deliveries, although the cause is the same in each. If, in such cases, I find the os dilated, pain and hemorrhage, the prospect of saving the child is poor indeed.

Driving, as we do, many miles in the country to see such patients, I have made it a practice to dilate rapidly, if necessary, and turn out the entire contents of the uterus. The prospect of hemorrhage following a complete operation of this character is slight. The danger in those cases comes from leaving some of the after-birth intact. Here, again, the trust-to-luck obstetrician is apt to have a sudden or remote death on his conscience.

It is very essential that we manage breech presentations with great caution. Until the breech appears in the vulva there is, as a rule, no danger to the child. But we must act quickly when the breech appears.

If we have hastened labor by force, there is the danger of the head approaching the brim of the pelvis before dilatation is fully established. If dilatation is not fully established, then the labor will be most difficult. Force and haste on our part, when neither are called for, is the great difficulty in those cases. The temptation is great. Avoid it. The lower uterine segment offers the obstruction in a large majority of those cases when we are inclined to attribute the cause to a contracted pelvis.

Deliver both upper extremities with the body of child. Place forearm under the body, and fingers in child's mouth and make traction on breech. Force should be exerted toward the pelvis of child to avoid fracture of the femur. I have never been obliged to place forceps on breech to aid delivery.

Let us shortly consider a few diseases that influence the course of pregnancy. Abortion and premature labor may be caused by an attack of pneumonia. Pneumonia, during the last few months of pregnancy, is especially to be dreaded, as fully one-half the cases die. Hence our prognosis should be grave. If the mother, in such a case, is threatened with asphyxia, we are justified in causing premature delivery.

Pleurisy may cause premature delivery, but the course is not influenced by pregnancy to any great extent.

The tubercle of consumption will, if the general condition of the patient is good, remain in a latent state during pregnancy, but when the patient is debilitated the disease generally breaks out with renewed vigor. Such persons should not be permitted to nurse the child.

Auto-intoxication arises from sluggish action of the kidneys and liver. The earlier in pregnancy the lesion of the kidneys manifest itself, the more serious for both mother and child.

I am in the habit of sitting by the bedside in every instance and occasionally kneading the uterus—to insure contraction—for one full hour after the delivery of the placenta. Never leave the house while the woman has a pulse of over one hundred. When we feel hard, firm contraction, with a steady pulse and a temperature below one hundred, we may turn to our couch and sleep the sleep of sometimes profound exhaustion.

MEDICAL PROGRESS.

SURGERY.

Cervical Zones of Hyperalgesia after Cerebral Injuries.—It is an accepted fact that where areas of the skin present certain sensory disturbances, the cause of the latter may be found in some lesion in an internal organ. R. MILNER (*Berl. klin. Woch.*, April 25, 1904) believes that with some modifications this principle may also be applied to injuries of the head. He reports a case where, after the infliction of a bullet wound which involved the surface of the brain, but did not lead to any marked general symptoms, localized areas of analgesia could be mapped out in the neck. In this instance there was probably a direct irritation of the minute divisions of the sympathetic, either in the pia or in the gray matter, and the extent of the hyperalgesic zone corresponded to one of the upper cervical segment, probably the second. The author thinks that further study of these zones may be helpful in the diagnosis of cerebral injuries, especially when the picture afforded by the X-rays is not sufficiently clear or conclusive.

New Method for Exposing the Liver.—A novel operative procedure for reaching the posterior surface of the right lobe of the liver has been suggested by J. ISRAEL (*Deut. med. Woch.*, March 31, 1904). The patient which he reports was believed to have a tuberculous right kidney. There was pain on pressure in the lumbal region, which was believed to be due to the kidney. The latter was exposed from behind after resect-

ing the twelfth rib and then pushed to one side after being freed from its attachments. The posterior aspect of the right lobe of the liver was thus exposed and on it was seen a tumor, which was removed. It proved to be a gumma and the patient made a good recovery under appropriate treatment. Although there may have been some doubt as to the propriety of surgical intervention in this case, still the advantage of reaching this region of the liver was shown. It is indispensable however, that the pedicle of the kidney is sufficiently long to permit pushing the kidney to one side.

Appendicular Inflammation.—An important fact to bear in mind, that so long as the mucous membrane is intact there can be no infection of the appendix from within. This layer also contains numerous large lymph follicles, which later may extend throughout the next two deep layers. To these lymph follicles, LOUIS FRANK (*Am. Jour, of Obst.*, March, 1904) attaches great importance. In numbers they vary. At the base of the lymphoid follicle, which is analogous to the solitary follicle in the large gut, there is an opening between it and the surrounding structures. This is the basal lymph sinus of Clado. Sometimes these follicles open directly upon the mucosa. The lymphatics of the appendix enter the mesoappendix, where some of them pass through a lymphatic gland, situated at the ileocecal angle. From the mesoappendix enter the mesentery and then pass onward. The lymphatics also communicate directly with those in the iliac fossa, along the course of the external iliac artery. The classification of catarrhal, suppurative, gangrenous perforative, etc., is all wrong from a pathological standpoint. It is not possible, even clinically, to always recognize the changes taking place in the organ, so it is better to speak of all cases as merely an inflammation of the appendix with suppuration, with rupture, with abscess, etc. This conveys a correct clinical or pathological idea of the condition laid before us. In all cases, whether the cause operate from without, as from embolus, hernia, etc., the one and sole cause of inflammation itself in the appendix is bacterial invasion. Without this there is no pus or inflammation, or even death, no matter what may be the interference with the blood supply. For bacterial invasion, loss of epithelium or greatly lessening of its vitality is necessary, and this is found to be true in all cases examined. Having once entered the lymph channels the organ is doomed, and though it may have been years since the bacterial entrance, they will be found upon examination, unless the inflammation has resulted in obliteration. The essential factor in all inflammation is bacteria, and no matter how active the predisposing factors may be, how extensive or severe the torsion of an organ may be, or how large the embolus present, so long as microorganisms are excluded, no peritonitis will be found.

Removal of One-half Thyroid Gland.—The main difficulties in operations on the thyroid gland are: (1) Hemorrhage; (2) injury to the recurrent laryngeal nerve; and (3) expression of the contents of the gland by manipulation of the organ during operation. To avoid, so far as possible, these difficulties, J. G. SHELDON (*Med. Rec.*, April 9, 1904) employs a method which was previously used by A. P. Gould. After the gland has been exposed by either a transverse or angular incision, a Kocher's director is passed between the isthmus and the trachea. A stomach clamp is then placed upon the isthmus close to the lobe which is to be left, and another clamp close to the first upon the isthmus. The isthmus is then cut between the clamps and with the lobe to be removed is turned outward. The under surface of the gland is then separated from the underlying tissues with the finger covered by gauze. The arteries are thus easily seen and clamped, the inferior one generally first and the recurrent laryngeal nerve is usually easily found beside the inferior thyroid artery. After the arteries have been tied the veins do not bleed, and as it is very difficult to tie the arteries without previously cutting several veins where the gland is attached from in front and to the outer side, a great advantage is thus gained by the method described. Furthermore, when the enlargement of the lobe is of considerable size it is always external to the point where the superior artery enters it and hence the operation must necessarily be more or less bloody before the artery can be reached. The manipulation of the gland is also much less injurious when done by this method and the dangers of toxemia are diminished. Tubular drainage should always be used for ten to twelve hours on account of the profuse primary wound secretion and the danger that some of the gland contents may have been expressed.

MEDICINE.

The Blood Examination in Abdominal and Pelvic Diseases.—During the past two years the value of the blood estimation in abdominal inflammations has received much attention by surgeons. In a critical review of the literature for this period, E. SCOTT CARMICHAEL (*Brit. Jour, of Obstet.*, Feb., 1904) finds that the various writers upon this subject have come to the following conclusions: The red blood corpuscles and the percentage of hemoglobin afford but little help in diagnosis, although in acute toxemias the amount of both is very considerably diminished. Their diminution, along with a slight leucocytosis according to Bender, is a sign of malignancy in tumors. A leucocytosis is undoubtedly more reliable than the temperature in the diagnosis of pus, especially in the more chronic cases. The tendency to look upon a certain definite number of leucocytes as indicative of pus must be avoided. In general there is not such a high degree of leucocytosis in purulent inflammations of the female genital organs as there is in such conditions of liver abscess and suppurative appendicitis. The more chronic the inflammation the lower the leucocytosis, so that a lower count in chronic inflammations must be regarded with suspicion. In gynecology it forms a most valuable aid to the differential diagnosis of tubal conditions, and is often of great value in determining the advisability of an abdominal or vaginal operation. The leucocyte count should be made at regular intervals and compared with the temperature curve. After operation the leucocyte count may indicate the completeness or otherwise of drainage in suppurating cases. The relative value of the quantitative and qualitative count is open to opinion. For the clinician the quantitative count is easily performed, and is sufficient in the majority of cases. The value of the qualitative count is diminished in value by the fact that much experience is required for the enumeration, which cannot be easily gained by the ordinary clinician. In the hands of the laboratory expert, it is probably of more value than the quantitative count for diagnostic purposes. The same may be said of the idiophilic reaction.

Hypoleucocytosis in Typhoid.—The great value from a diagnostic point of a hyperleucocytosis is known to all, but in one disease at least the opposite condition, hypoleucocytosis, plays an equally prominent part. In 53 mild cases of typhoid, L. KAST and C. GUTIG (*Deut. Arch. f. klin. Med.*, Vol. 80, Nos. 1 and 2), found the leucocytes below 7,000 in 47, between 7,000 and 9,000 in four and above 9,000 in two. For 31 severe cases the figures were 30, 1 and 0 respectively, and for 21 fatal cases 20, 1 and 0. Even the presence of complications caused by germs other than the Eberth bacillus is not likely to increase the number of white cells; thus for

25 cases the majority of which also suffered from staphylococcus infection, the figures were 20, 3 and 2. They inculded cases of severe bronchitis, lobar and lobular pneumonia, decubitus, icterus, colpitis, etc. A constant leucocytosis is generally found only after hemorrhage so that no conclusions should be drawn in doubtful cases if an intestinal bleeding has occurred recently. Prognostically, relatively high counts seem to speak for a favorable outcome ,if observed repeatedly, while a sudden decrease of lymphocytes is an ominous sign. Diagnostically, above 12,000 almost certainly rules out typhoid, while below 7,000 and more so, below 5,000, makes typhoid exceedingly probable. Other peculiarities of the blood are a tendency of the neutrophiles to diminish, an absence of acidophiles and a slight decrease of lymphocytes up to the third stage when the latter begin to increase. Non-typhoid complications generally cause a slight, relative polynuclear increase which does not alter the leucopenia. The value of the various diagnostic aids in typhoid may be set down as follows: Widal 95 per cent., hypoleucocytosis 90 per cent., splenic tumor 86.6 per cent., diazo 75-85 per cent., roseola 69 per cent., while for the early diagnosis the order is as follows: Hypoleucocytosis, Widal, roseola, diazo and splenic tumor. The latter three are of about equal value. That hypoleucocytosis is of more value than the Widal in the first stage is evident from the author's cases where the latter was negative in about 13 per cent. Hypoleucocytosis may also occur in the following conditions: Inanition, measles, Banti's disease, severe secondary or essential anemia, malaria, pulmonary tuberculosis, tuberculous meningitis, acute miliary tuberculosis, sepsis and severe pneumonia. In many other conditions, the leucocytosis is first preceded by a diminished number, but this leucopenia is only relative since an accumulation of leucocytes occurs in the internal organs at the expense of the peripheral circulation. Diagnostic difficulties are only liable to arise with malaria (here the presence of plasmodia, of basophile punctuation and pathological changes in the shape of the erythrocytes, the normal or increased number of acidophiles and the occurrence of melanin in the leucocytes will aid), tuberculous meningitis, acute miliary tuberculosis, sepsis and severe pneumonia. In paratyphoid the blood composition seems to be the same as in typhoid.

Deficient Urea Excretion in Gout and Lithemia.—The diminished urea excretion which has been frequently noted in chronic gouty subjects has been generally attributed to the co-existing nephritis. R. K. MACALESTER (*Med. Rec.*, April 16, 1904) has made repeated examinations in some 20 cases of gout and lithemia unaccompanied by any demonstrable nephritic conditions and has invariably found that there is marked deficiency in the urea and uric acid excretion in these cases. This diminution is not present in chronic rheumatism and this fact, he claims, makes it easy by laboratory means to diagnose one condition from the other. The total urea output in gout, he finds, is considerably lower than that found in chronic Bright's disease, about two-thirds the amount excreted in other miscellaneous chronic disorders and about three-fifths the quantity excreted in health. He believes that it points to a defective hepatic metabolism, there being no clinical evidence of kidney trouble in support of the renal theory. Gout, goutiness and lithemia are thought to be of the same origin, but modifications of the same disorder and are, in general, more amenable to treatment, especially to balneotherapy than chronic rheumatic affections.

Accuracy in Measuring Blood-Pressure.—In order to determine accurately when the pulse disappears and reappears with the Riva-Rocci apparatus, G. GROEDEL and F. KISCH (*Münch. med. Woch.*, April 19, 1904) have resorted to special apparatus which records the pulse-curve graphically. They find, however, that almost the same results are obtained with the palpating finger. With long-continued experiments the sense of touch may be blunted, but the eye may also fail to record the almost microscopical excursions of the accessory instruments. The rudimentary pulse-curves recorded upon the apparatus can generally be felt with the finger as well.

Influence of Cold on Heart Action.—It is quite universally believed that cold acts as a sedative to cardiac action. Some careful observations have been made on this point by W. KREBS (*Berl. klin Woch.*, April 25, 1904) in a number of patients presenting various diseased conditions. He comes to the conclusion that a certain class of patients suffering from cardiac insufficiency, whether of an organic or a neurotic origin, are benefited by the external application of cold over the cardiac area. This is evident from the improvement in the pulse rate and increased arterial pressure. It is very likely, however, that the enforced quiet to which the patient is subjected is an important factor in bringing about a favorable result. No results of an objective character can be seen in other cases of heart disease and these methods cannot compare in their efficiency with digitalis. The application of cold is agreeable to the patient, but the writer has found that equally good effects are secured when the water employed is of an indifferent temperature. The application of a certain degree of moderate pressure over the cardiac area also seems to relieve the patient to a more or less marked extent.

NEUROLOGY AND PSYCHIATRY.

Treatment of Neuralgia by Injections of Osmic Acid.—Severe cases of neuralgia frequently refuse to respond to any of the various methods of internal treatment and either become miserable morphine habitués or finally submit to a radical surgical operation, the mortality of which is considerable and the cure by no means certain. G. A. WRIGHT (*Med. Chron.*, Feb., 1904) advises a more careful use of the method by which osmic acid is injected into the nerve trunk itself after it has been exposed by dissection. He uses a one and a half or two per cent. watery solution of osmic acid and injects it directly into the nerve trunk or its branches, sometimes both toward the periphery and the center, and the acid escaping more or less freely into the tissues immediately around the nerve. He has tried this method on some thirteen cases with uniformly good results, but in many instances the length of time elasping since the treatment has been too short to make any conclusion of value. The harmlessness of the treatment, when not done in a haphazard way,' is generally conceded and should certainly be tried before resorting to such severe procedures as the excision of the Gasserian ganglion.

Paralysis Agitans After Trauma.—Traumatism is only in rare cases considered an active etiological factor in the production of this disease. K. RUHEMANN (*Berl. klin. Woch.*, April 11, 1904) states the results of careful observation on 35 cases and in 7 of these he claims that the disease could be distinctly traced to an injury. The characteristic symptoms of the trouble appeared in each case within a short time after the injury, and in few cases where there were indefinite signs before the trauma was inflicted, these grew rapidly and progressively worse soon after. The clinical picture did not vary much in the two classes of cases, but where an injury was assumed to be the cause, the disease usually appeared first in that limb which was subjected to the traumatism. In comparatively young individuals, who had been perfectly healthy before the injury, the latter can with certainty be put down as the cause for the dis-

ease, for in this instance age as predisposing factor can be excluded.

Influence of Alcohol on Cerebrospinal Pressure.—In order to measure the cerebrospinal pressure under various conditions, R. Finkelnburg (*Deutsch. Arch. f. klin. Med.*, Vol. 80, Nos. 1 and 2) introduced a trocar between the vertebræ and connected this with a manometer. After about half an hour the pressure will maintain a constant level and the action of various drugs can then be tested. If alcohol is introduced into the stomach of the animal with the stomach-tube, no change is noticed for eleven to thirty minutes. After that, the fluid will rise and then drop to the normal again in one to 3½ hours. Control animals did not show this rise and the pulse and respiration remained normal throughout the experiment. Probably the after-effects of an alcohol debauch in man, such as headache, hyperesthesia of the skin of the head, vertigo and slight stupor find their explantation in an acute hydrocephalus and general increase of cerebrospinal pressure.

PHYSIOLOGY.

Origin of Sugar from Proteid.—Considerable doubt has recently been expressed by Pflüger and his school as to whether sugar is ever formed from albumin in the animal body. Many of the apparently positive experiments must be ascribed to the presence of glycogen in the liver and muscles, and the occurrence of glucosides and glycoproteids. H. Lüthje (*Deutsch. Arch. f. klin. Med.*, Vol. 79, Nos. 5 and 6) has gone over the field anew and comes to different conclusions. A number of dogs whose pancreas had been extirpated, excreted much more sugar after the operation than could be ascribed to their glycogen or the carbohydrates contained in the food. Furthermore, a diabetic patient was kept for months on meat, eggs and coffee; as soon as casein was added to the diet, the amount of sugar in the urine increased at once. There can thus be little doubt that proteid forms one of the sources of sugar.

Effect of Drugs on the Coagulation Time of Blood.—A drug which materially shortens the time of blood coagulation would be a valuable addition to the Pharmacopœia. T. R. Boggs (*Deutsch Arch. f. klin. Med.*, Vol. 79, Nos. 5 and 6) has tried most of the substances usually recommended, chiefly with negative results. Gelatin, when injected into animals intravenously or subcutaneously, seems to have very slight or no influence, even if coagulation is first retarded by injecting leech-extract. The same may be said of gum arabic, milk, the serum of other animals, and distilled water. Even serum which had been rendered active, so that coagulation was exceedingly rapid in the test-tube, had no appreciable influence when injected. Thrombokinase, such as is obtained by macerating different organs, especially the thymus and liver, cause rapid clotting, but proved very toxic to animals. Therapeutically, the best results were always obtained with lime salts, and the lactate of calcium is especially recommended as it is almost tasteless.

Presence of Iodine in Organs.—The presence of iodine in the thyroid was regarded as peculiar for that organ, until J. Justus (*Virchow's Archiv*, Vol. 176, No. 1) showed that this element is present in all the tissues with the sole exception of the yellow bone-marrow. The liver and kidneys especially give high figures, as well as skin, hair and nails. The stomach is nine times richer in iodine than the succeeding duodenum. The simplest method of determining approximately the amount of iodine is as follows: The comminuted organ is boiled with caustic soda, evaporated and incinerated. The residue is treated with peroxide of hydrogen and water, filtered, the filtrate acidified with sulphuric acid, then treated with sodium nitrite and shaken with benzol. Free iodine will be liberated and will be taken up by the benzol. The color of the latter can then be compared with a standard solution.

Origin of Sugar from Fat.—Continued researches of H. Lüthje (*Deutsch. Arch. f. klin. Med.*, Vol. 80, Nos. 1 and 2) show that sugar may be formed in the organism from fat, as well as from proteid. An artificial glycosuria was created in a series of dogs by extirpating the pancreas. When a certain, definite amount of glycerin was added to the food, the excretion of sugar was always higher than before. The difference could not be accounted for by the glycogen present, or the amount of proteid injected.

Temperature and Secretion of the Normal Stomach.—In a patient with absolutely normal stomach, a gastric fistula had formed secondary to a severe abdominal operation. G. Galli (*Münch. med. Woch.*, April 19, 1904) used this case to determine any variation in temperature, especially in relation to food. The temperature in the empty stomach seems to be the same or slightly increased as compared with that of the full organ and no definite relation to the rectal measurements could be obtained. When the temperature inside the stomach was increased or diminished by heat or cold food, it took about an hour before normal figures were again obtained. Physiologists are of the opinion that the stomach never secretes gastric juice except in the presence of food or if stimulated reflexly by the sight or smell of food or by chewing. In the author's case, however, gastric juice was frequently found without any apparent reason for its presence. Another interesting observation was the occasional absence of free acid during the height of digestion. The following figures were obtained for total acidity: One hour after dinner, 45; three hours, 55; five hours, 65. An experiment with salol proved that this drug is never decomposed in the stomach.

HISTOLOGY, PATHOLOGY, ETC.

Fat in Blood of Immunized Animals.—Many researches have been published concerning the proteid changes in the blood of immunized animals, but M. Hahn (*Münch. med. Woch.*, April 19, 1904) was the first one to systematically investigate the fat. The extract obtained by shaking the blood with petroleum-ether was invariably greater with immunized than with normal animals, and of the many substances which are dissolved out by the ether, the fat was especially increased. There is thus a definite relation between the bactericidal power of the blood and the amount of fat it contains. The origin of the fat could not be determined; it is probably not derived from carbohydrates or proteids.

Forensic Identification of Human Blood.—In a second communication, H. Marx and E. Ehrnrooth (*Münch. med. Woch.*, April 19, 1904) lay considerable stress upon the phenomenon of isoagglutination. Human blood will frequently be agglutinated by the blood of some other human being, owing to the presence of isoagglutins, but there are marked variations in this respect, since some blood is very poor in these substances. This agglutination by homologous serum is slow; the different erythrocytes retain their contour and the hemoglobin does not dissolve out, while with heterologous serum the disintegration is complete. Isoagglutination is lost if the blood has dried for two to four weeks, while hemotcytolysis is still pronounced after three years with heterologous agglutination. The serum of an animal *A* which will agglutinate the cells of an animal *B*, will lose this property if *A* is treated with the serum of *B*. On the other hand, human serum *C*,

which will agglutinate the human cells of *D*, will agglutinate still more strongly if serum *C* is treated with serum *D*. This will afford a simple means of distinguishing between homologous and heterologous clumping. Thus, if agglutination occurs in a specimen of blood treated the usual way, it is only necessary to add a drop of diluted blood from the examiner's finger. The agglutinating serum came from a different species if the clumping is less after this addition, from the same species if it is increased. The test should always be controlled by the original Uhlenhuth reaction.

Localization of Macula Lutea in Brain.—Though the visual area of the cerebral cortex has been pretty well studied there is still considerable doubt as to which part represents the point of maximum vision in the eye. In a large monograph recently published the opinion was expressed that the anterior portion of the calcarine fissure represents the macula lutea, but an interesting case observed by L. Laquer (*Virchow's Archiv*, Vol. 175, No. 3) seems to argue more for the posterior portion. About one year before death the patient developed a bilateral hemianopsia but retained excellent vision in a small central area. At autopsy, the right occipital lobe was found softened in the neighborhood of the calcarine fissure, except in the most posterior portion, about 18 mm. from the tip of the lobe, where cortex and medullary portion were completely intact. Much the same condition was found in a second case where a bullet had pierced the back of the head. It seems a wise provision of nature that a center is located in each hemisphere.

Pathology of Cystic Kidneys.—The most peculiar feature noticed by O. Busse (*Virchow's Archiv*, Vol. 175, No. 3) while studying six fetal cystic kidneys, was the large amount of connective tissue present. The large size of the organs seems to depend more upon this than upon the cysts themselves and the entire condition would be called fibroma more appropriately than adenoma. The fibers are generally very delicate and resemble those met with in fibroma molluscum; toward the pelvis they are frequently mixed with true muscle fibers and may even contain cartilage. There is no question that the cysts originate from the glomeruli, and the papillary excrescences on the inner wall, which were formerly looked upon as confirming the adenomatous character of the growth, are merely the remains of the glomerular loop. The convoluted tubes also participate, but to a much less extent. The author does not think cystic kidneys should be classed under true tumors or that they should be looked upon as results of interstitial inflammation leading to obstruction of the apices of the papillæ, for he has made the important discovery that they bear a very close resemblance, even in minor histological details, to the normal organs of very early fetal life. If the embryonal condition remains owing to some inhibitory influence, cystic kidneys will result. During the normal process of development, the proliferating tubules will gradually replace the connective tissue until little of this is left. In many cases the patients have evidences of faulty development elsewhere, such as hydrocephalus, syndactyli and cysts in liver and pancreas. The finer structure of cystic kidneys of adults differs considerably from that of the newly born, in that there is more renal and less connective-tissue. The glomerular origin of the cysts is not so evident and they generally lack the characteristic, thick, fibromuscular wall in the cortex. Probably the condition here depends also upon a disturbance in development, but so circumscribed that only a small portion of the kidney is rendered inactive, unless the growing cysts cause compression and secondary atrophy of the adjacent tissues.

Peritoneal Exudate, an Early Symptom of Perforation Peritonitis.—Since Wegner's important work, the remarkable absorption power of the peritoneum, both for infections and intoxications, will always be regarded as definitely proven. Moszkowicz has studied this question from the clinical standpoint, his observations having been based chiefly on cases of appendicitis. C. S. Haegler (*Zntrlbl. f. Chir.*, March 12, 1904) states that he has been carrying on experimental work on animals for the last year with a view of determining what symptom became most prominent after perforation. He agrees with Moszkowicz that a serous exudate is the first recognizable factor and states that he found its quantity to be invariably in proportion to the extent or the virulence of the infection. One may consider this serous or, as it may be, hemorrhagic exudate of the peritoneal cavity a protecting factor having a double mode of action. If protection be needed against a very virulent toxin or a multiplicity of bacteria in the neighborhood of the site of infection, the exudate will be of a thin and serous character in order to dilute the toxins and the bacteria as freely as possible. Infections of a more diffuse character call for and receive less dilution and a greater amount of fibrin. It is not to be doubted that in the case of local inflammations of the bowel wall, the development of a copious amount of fluid in the peritoneal cavity is a bad prognostic sign. It shows that no tendency toward walling off has taken place and that great quantities of highly poisonous toxins or germs or both, have been liberated in the peritoneal cavity. This symptom points very persistently to a bad prognosis.

Clinical Aspects of Rheumatic Infection.—The reexaltation of the virulence of pathogenic organisms has long been a favorite topic for discussion. Carey Coombs (*Lancet*, Feb. 27, 1904) cites a large number of cases which appear to give striking corroborative evidence of this belief. He sums up his conclusions as follows: It is common to see a woman, thirty-five years of age, with mitral stenosis who has had rheumatic fever at the fifteenth or twentieth year without recurrence. The symptoms of cardiac disease often do not appear until many years after the arthritis. Necropsy shows extreme fibrosis of the mitral valve. It seems a more probable explanation of this thickening that it has been brought about by chronic irritation due to organisms of lowered virulence than that it sprang from the infection at the period of its fastigium. A case of the nature under consideration sometimes breaks out into malignant endocarditis. This is usually ascribed to reinfection of previously scarred valves, but the author cites a case in detail purporting to show that such reinfection did not occur, the disease having been awakened from resident germs of lowered vitality. The vegetations in this case contained swarms of micrococci apparently corresponding to the *Micrococcus rheumaticus* as described by recent authors. Again, relapse is common in rheumatic fever; even commoner than in enteric fever, occurring in about 20 per cent. of all cases. Rheumatic affections tend also to recur at intervals too long to call them relapses. Cases of acute rheumatic arthritis with aortic incompetence who are reported as having suffered with rheumatic fever seven or eight years before with one or two attacks in between times are not by any means rare. If such a condition is to be brought about by reinfection, it is without parallel in the history of microbic diseases. It is true that many of the infections are capable of prolonged periods of latency, to wit: Tuberculosis with its quiescent foci, *Bacillus typhosus* in bone lesions, *Bacillus coli* in the liver and gallbladder, *Staphylococci* in bone marrow, and so on. If all these organisms can remain latent, reasserting them-

selves as soon as they get a chance, why should the *Micrococcus rheumaticus* be held to differ from them in this respect?

Agglutination of Typhoid Bacilli by Other Bacteria.—That typhoid bacilli are frequently agglutinated by the serum of animals treated with the various members of the colon group is well known. D. LUBOWSKI and D. STEINBERG (*Deutsch. Arch. f. klin. Med.*, Vol. 79, Nos. 5 and 6) claim a similar action on part of a number of other bacteria. In two cases of otitic proteus infection, one of which was also complicated by staphylococcus and streptococcus infection, an agglutination of typhoid germs in a dilution of 1-80 was observed after two hours by the microscopic method. The autopsy did not reveal any lesions suggestive of typhoid and the previous history was negative. This agglutination can also be observed in some, but not all rabbits or guinea-pigs, treated with injections of proteus or staphylococcus culture. With *Streptococcus, Bacillus cholera Asiatica* and the *Bacillus fluorescens liquefaciens*, no agglutination was obtained.

OBSTETRICS AND GYNECOLOGY.

The Origin of Vaginal Cysts.—It is most difficult to classify a certain number of the cysts from the point of their origin for, says PIERRE FREDERT (*Annales de Gyn. et D'Obstetrique*, March, 1904), it is not to be shown from exact date nor can it be demonstrated that certain possibilities are probable from our anatomical knowledge. It can only be proven with certainty by their Wolffian origin (ducts and pseudoglandular canaliculi) and the vulvovaginal origin. A cyst situated high up in the vagina upon the lateral walls, may be, perhaps, Wolffian in origin; if it is situated low down, it probably is a cyst of an aberrant vulvovaginal gland. The origin of those cysts of the anterior wall is in doubt; above their origin depends upon aberrant cervicouterine glands; along the rest of the vagina near the median line, cysts take their origin from aberrant ureteral glands. Of all vaginal cysts, the most difficult to explain are those in the posterior portion of the vagina; all high up and to the side, are thought to be derived from pseudoglandular diverticula of the canal of Gärtner; to be from the canaliculi of the paraoophoron of the Wolffian body; below, on the median line, they must be considered as an embryonal cul-de-sac of Douglas; near the vulva, both anteriorly and posteriorly, are to be found vulvovaginal glands.

Abscess of the Uterus.—The development of such a condition in the wall of the uterus is of sufficient rarity to justify the publication of every undoubted instance. A. W. W. LEA (*Brit. Jour. of Obstet.*, Feb., 1904) relates a case where the abscess developed during the puerperium in a patient who was suffering from gonorrhea at the time of delivery. Its existence was not suspected until the abscess ruptured into the peritoneal cavity. Six weeks later abdominal section was performed, and the condition recognized. The patient made a good recovery. The symptoms of abscess of the uterine wall must often be obscure. As the condition is frequently complicated by intrauterine and pelvic inflammation which must render its recognition in many cases almost impossible, Von Franqué, in 15 collected cases, gives the following points as suggestive of this condition: (1) Pyrexia. This often commences suddenly, and is accompanied by rigors. There is nothing characteristic about the fever, but may continue indefinitely, especially in gonorrheal cases. (2) Pain. This is usually severe, paroxysmal in character, and felt in the lower part of the abdomen. (3) Physical signs. The uterus is enlarged, softened and very sensitive. In some cases a rounded swelling has been detected, often situated asymmetrically, and accompanied by signs of pelvic inflammation. It is obvious that these symptoms are not very definite. A small infected myoma of the uterus may produce quite similar symptoms, and it would be in many cases impossible to distinguish between this and abscess. Abscess of the uterus usually terminates by perforation, most often into the peritoneal cavity, but it may also perforate into the rectum or uterus.

Prophylaxis of Puerperal Sepsis.—In spite of the many advances which have been made toward aseptic surgery during the past two decades, we are still confronted with the deplorable fact that outside of lying-in hospitals, sepsis now claims as many if not more of the parturient mothers than it did twenty or forty years ago. G. L. BRODHEAD (*Med. Rec.*, April 23, 1904), in pointing out one of the most prolific causes of puerperal sepsis, shows that the vaginal secretion from healthy women is absolutely free from pyogenic cocci but that such bacteria are present often in large numbers upon the hymen and labia. There is no doubt that, as a rule, the germs are carried in on the examining finger and we thus find that internal examinations are undoubtedly the cause of a large number of deaths. He lays especial stress upon the fact that very few internal examinations are necessary and in many cases they need not be made at all after labor begins. The antepartum examination should be made thorough and complete to exclude, as far as possible, the chance of complications at the time of confinement. A careful external examination at the latter time will give in most cases all the information that is necessary. The diagnosis of the presentation, engagement and position can almost invariably be made out externally. The condition of the child's heart and the character of the pains will, furthermore, give fairly accurate information to an experienced person of the satisfactory progress of the case. Where internal examination is necessary he recommends the use upon the vulva of a solution consisting of chloride of lime, one teaspoonful, and acetic acid, two teaspoonfuls, to the quart of water. A solution twice as strong as the above may be advantageously used to disinfect the hands after they have been thoroughly scrubbed.

Local Anesthesia in Gynecological Operations.—That a limited sphere should be assigned to general anesthesia and more liberal use made of local anesthesia, is the suggestion made by J. C. WEBSTER (*Jour. Am. Med. Ass'n*, April 23, 1904). The former is of value in making a diagnosis in certain classes of patients, but instead of using ether or chloroform, he prefers nitrous oxide gas given with the Packard inhaler. Where extensive plastic operations are to be done, or where these may be followed by abdominal work, the Schleich solution No. 2 may be advantageously employed, a small amount of formalin being added to lessen the risk of infection. The author has performed various plastic operations on the vulva, cervix and vagina, and has also extirpated the diseased uterus and adnexa through the vagina. The abdominal operations which were done included the removal of tubes and ovaries, shortening the round ligaments, myomectomy, hysterectomy, appendectomy and resection of the intestine. A strong suggestive influence is obtained by sprinkling a few drops of chloroform on a mask held over the face. In extreme anemia and sepsis, the local anesthesia greatly diminishes the risk, and he cites a case of ruptured ectopic where the hemoglobin was less than 24 per cent. With regard to the sensibility of the various tissues, it was found that the parietal peritoneum was usually most sensitive, especially when sutured or dragged upon. Separation of adhesions between the parietes and any other structure causes pain, whereas the breaking of adhesions between viscera rarely causes distress.

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PROPHYLAXIS OF FOURTH OF JULY TETANUS.

Shortly after the Fourth of July last year, we called attention to the large number of fatal cases of tetanus which had occurred in this country as a consequence of the celebration of the Glorious Fourth. Since then determined effort has been made in a number of parts of the country to organize rational opposition to the present methods of celebrating the Fourth, at least to bring about the amelioration of certain of the most objectionable features of the celebration. Unfortunately this movement did not meet with the success that it deserves. It is true some of the eastern cities have passed laws forbidding the sale of pistols that fire blank cartridges, and some have also made ordinances with regard to the size of the firecrackers that will be allowed to be used. Philadelphia especially, under the influence of wide-awake methods in the Board of Health, seems likely to limit fatalities.

In general, however, it would seem that nearly the same fatal results may be expected this year as last. During June and July, 1903, according to the statistics collected by the *Journal of the American Medical Association*, there were 406 deaths from tetanus and 60 deaths from other causes as the result of Fourth of July accidents due to fireworks. Besides this there were nearly 4,000 non-fatal injuries of sufficient seriousness to be reported to the police, or be received into hospital dispensaries.

The one hope is to prevent the development of tetanus in these cases, if possible, for, so far, no medical or surgical treatment of any kind seems to be effective in preventing a fatal termination if there has been serious infection by the disease. This is not hard to explain if we remember that the first symptoms of tetanus are not those of the beginning of the disease, but as has been well said by a distinguished German authority, are the first manifestations of beginning death from the disease. Last year, of all the cases of tetanus reported following injuries by fireworks, less than ten were reported as recovering. With recoveries so rare it is reasonably sure that all that actually took place found their way into the statistics, since attending physicians and surgeons would be glad of the opportunity to report them. It is very probable that some fatal cases of tetanus at least did not find their way into the statistics. The mortality then must be considered as well above 95 per cent., and recoveries were due not to any treatment employed, but to the fortunate accident of a mild infection, or some specially favoring circumstance in the method of infection or a high resistive vitality.

The prophylaxis of tetanus then becomes the great problem in the treatment of wounds received from fireworks, at this time. As far as could be ascertained of the 406 fatal cases of tetanus, 363 developed as the result of wounds inflicted by blank cartridges. Tetanus from all wounds inflicted by other kinds of fireworks, as far as could be found out, occurred in only about thirty cases. It is evident then that special attention must be given to the treatment of blank cartridge wounds. These are always deeper and more serious than they appear to be. The paper wad from the cartridge is often driven some distance into the tissues. When the wound is in the palm of the hand, as is so often the case, portions of the thick skin of the palm are usually carried with it. During the course of the celebration of the Fourth, hands are sure to be grimy with street dirt. Street dirt in our large cities always contains the tetanus bacillus. If these bacilli are thus carried deeply into the tissues then they find specially favorable circumstances for growth, in the absence of oxygen. The one absolutely necessary precaution is to clean the wound out thoroughly, removing all foreign

material and then pack it in such a manner as to allow free ingress of air and free exit for secretions.

This is not as easy always as it might seem. Portions of the wad from the blank cartridge are sometimes carried through between the bones of the hands and are driven along tendon sheaths to some distance from the point of entrance. In order to secure their thorough removal, considerable surgical manipulation of the tissues is required. As a rule, young patients will not permit this prolonged painful surgical intervention and even parents are almost sure to consider that it is unnecessary. In order to make a thoroughly satisfactory cleansing, anesthesia will usually have to be employed, especially if the wound has been inflicted by a blank cartridge pistol pointed directly and at a short distance from the tissues. Powder grains carrying dirt from the skin will also be found imbedded here and there in the tissues and must be removed for assurance sake. These wounds have been treated, heretofore, as a rule, in a superficial way and now an entirely different method must be employed.

The result of such thorough treatment has in at least one set of reported cases proven very satisfactory. Drs. Allen and Ludlow reported ten cases, treated in Cleveland last year by the painstaking method described above, and not one of them developed tetanus. Five cases on the other hand, treated superficially, and sent into the hospital afterward, all developed tetanus. Results less striking, because observations had been made on fewer cases, but quite as satisfactory in the limitation of fatality, have been reported from other parts of the country. In one case at the Massachusetts General Hospital, tetanus bacilli were even found in the secretions from the wound, but it had been thoroughly cleansed and packed so as to allow free contact with the air, and no symptoms of tetanus of the nervous system developed.

The other element in prophylactic treatment, as far as the physician is concerned, is the injection of tetanus antitoxin. It is now pretty generally conceded that though this will neutralize the toxin of the tetanus bacillus, when it can reach it directly, it is not able to undo its effects once the toxic principle has become united with the nerve cells and incipient death from tetanus has announced itself. In the immediate neighborhood of the wound, however, its injection can scarcely fail to do good by neutralizing any tetanus toxin that may be absorbed from the focus of local infection which always characterizes the development of tetanus. Thousands of injections of tetanus antitoxin have now been made without any bad results being reported, so that there need be no fear in using it freely, even to the extent of ten cubic centimeters a day for several days after the wound has been properly treated. This can scarcely fail to be an adjuvant in the treatment and add to the assurance of complete prophylaxis of tetanus of the nervous system. In horses, this method, according to Dr. MacFarland, is almost a guarantee.

An external non-medical means of prophylaxis would be the withdrawal of the permission to use toy pistols which fire blank cartridges, and the forbidding of the large giant crackers in the celebration of Independence Day. Roman candles and rockets and the small firecrackers with paper caps and torpedoes were last year responsible for none of the cases of tetanus that occurred. If the elimination of these objectionable forms of making noise, which have no special advantage in patriotic motives, could be effected, then there would be much less danger in Fourth of July wounds and much less complaint of the nuisance of the celebration. These constitute the most objectionable and least defensible features in the present method of celebrating the Fourth. Surely the common sense of the community will back up the medical profession in securing this amelioration of present conditions which is likely to have so wonderfully beneficial an effect.

MICROBES AND CANDY.

The editor of the *Ladies' Home Journal*, as we recently pointed out, has undoubtedly done a real humanitarian work by calling the attention of women generally to the patent medicine evil and pointing out how much of alcohol and opium and other undesirable drugs were being absorbed in this supposedly harmless fashion. He has very properly come to realize that much good can be accomplished by pointing out the medical dangers of other substances besides patent medicines, of which women consume large quantities. In his columns for the present month attention is very properly called to the number of evils that may flow from an excessive consumption of candy. The articles are likely to attract special attention because it is more than hinted that overconsumption of candy may readily lead to pimples and blackheads and other lesions which young women find especially undesirable. There

is no doubt that much of the unsightly acne of young growing girls is due to digestive disturbances, of which one important etiological factor is the overfree indulgence in many forms of sweetmeats now so common among the rising generation in this country.

These warnings with regard to candy are very properly found in the department of the *Ladies' Home Journal,* conducted by a physician. Some of the lessons of this department are emphasized by special editorial comment, however, and as a result we have some rather ridiculous pseudo-medicine furnished the million readers of the *Journal,* which is almost sure to do more harm than good. It seems very clear that if Mr. Bok himself writes the editorial page, and the tradition in newspaperdom is that he does, then he should have a physician, and one on whom he can depend, blue pencil his editorial effusions, whenever they touch on medical subjects, before he allows them to appear.

His readers of this month are treated to the following ludicrous exposition of the dangers of dust in candy: "A prominent physician, whose word is equivalent to that of highest authority, was standing beside the candy counter in a large department store not long ago when he said: 'Just look at those women buying that candy for themselves and their children. That candy has been exposed all day, while hundreds of people have passed by, shuffling their feet, and raising thousands of particles of dust from the floor. Most of that dust is brought from the street and contains every kind of the most dangerous germs and microbes of disease. Candy is, of course, sticky, and on account of its adhesive character everything sticks to it. Last week I came here and bought a quarter of a pound of each of four different sorts of candy which had been exposed on that counter only during the morning—just three hours, remember. I put the mass under the microscope, and amazed my clinic with what they saw. There were typhoid and malarial germs absolutely without number—the candy was literally covered with them.' "

It would be interesting to know just how the "prominent physician" succeeded in demonstrating the germ of malaria on the candy. He will confer a great favor on the medical profession of the world if he will only tell them just how the feat was accomplished. So far it has been the problem of modern medicine to discover a malarial germ outside of the bodies of animals and of certain insects. It is supposed that they do exist in some way outside of living circulating blood, but until Mr. Bok's announcement there has been no definite report of this available. If candy is the medium on which the malarial organism can be raised with ease it will not be long before all our laboratories will be furnished with a supply for the purpose of studying the stages of the life cycle of the malarial plasmodia which so far have proved rather baffling in their mysteriousness.

With regard to the typhoid fever germ we wonder just how its isolation and recognition were so readily accomplished. One of the puzzling problems of modern bacteriology has been the definite recognition of the typhoid germ from a number of organisms more or less normal to the human intestines, and which occur so commonly, is another point which we would like to have the good editor of the *Ladies' Home Journal* elucidate.

We do not think that there is a single case on record so far in which the origin of typhoid fever has been traced to the eating of candy. It is very evident that the boards of health, throughout this country especially, in our large cities have been seriously neglecting their duty in not warning people with regard to the dangers of candy, and now it would seem at last that an explanation of the many mysterious cases of typhoid fever, which have so far baffled investigation, is at hand.

The good editor of the *Ladies' Home Journal* has been tempted to use medical thunder, but evidently without quite realizing that it is loaded and that sometimes it strikes where it is least expected. The poor germ theory is responsible for enough of the ills to which this human flesh is heir without making it responsible for any more. There is no need for any exaggeration and, unfortunately, non-medical writers, when they want to emphasize a point, are almost sure to exaggerate and thus bring the germ theory into disrepute.

ECHOES AND NEWS.

NEW YORK.

Tuberculosis and City Dust.—Street Cleaning Commissioner Woodbury has made public the result of his medical examination of the sweepers of the department. Out of a total of 1,872 men 283 were found to be afflicted with pulmonary complaints. Of this number 60 had pulmonary tuberculosis. This percentage, Dr. Woodbury said, was not much above the average, but the percentage of the men found to be afflicted with the lesser forms of lung diseases and bronchial troubles was far above the average.

Miss Delano Acting Superintendent of the City Hospitals.—Miss Jane Delano, head of the training school for nurses at Bellevue Hospital, will have charge of the city hospitals during the absence of Acting Superintendent N. J. Rickard.

Care of the City Poor.—The New York Association for Improving the Condition of the Poor are doing a vast amount of good and while they are necessarily expending a large amount of money it is more than saved when it is considered that the people whom this association is helping would fall to the care of the city hospitals. The following figures taken from the *Times* show the extent of the work. Eighty-one mothers and 165 children were taken this week to their summer home at West Coney Island at a total expense of $663. The association hopes to send 13 more such groups from the crowded tenement districts. To do this will cost $8,643. Five dollars will send a mother and baby to the sea shore for a week, $10 will send a mother and three children. A bed may be named for the summer for $25. Treasurer, Robert Shaw, No. 103 East Twenty-second Street, to whom all contributions should be sent.

The Late Dr. John Metcalfe Polk.—At a meeting of the Medical Association of the Greater City of New York held June 13, 1904, the following report was presented and adopted:

It is the sad duty of the committee to report to the association the death, from pneumonia, of Dr. John Metcalfe Polk, younger son of Dr. William Mecklenberg Polk, long a practising physician of high standing in this city.

Dr. Metcalfe Polk was born on May 6, 1875. He was graduated from Yale in 1896 and from the Medical Department of Cornell University in 1899. He then entered Bellevue Hospital as interne and after remaining there two years went to Vienna to perfect himself in pathology and medical diagnosis. On his return from abroad he was appointed Instructor in Medicine and Physical Diagnosis in the Cornell Medical College and Assistant Visiting Physician to Bellevue Hospital.

At the time of his death he had just completed an exhaustive study of pneumonia. He had written and was about to publish a paper on "The Blood Changes in Pneumonia," which promised to bring to the attention of the profession some very important and original ideas.

The untimely death of Dr. Polk has removed from the ranks of the profession one of the most brilliant of its younger members. He had prepared himself through his great natural abilities and untiring energy to begin a professional life of unusual promise. At the time of his death he was pursuing with enthusiasm those branches of science the investigation of which would mean for him the broadest and most durable foundation of future success.

His gentle manners, unselfishness and sterling character had won for him warm friends among the best of the profession, both old and young. To the older men who knew him his death will mean the sacrifice of a career which the profession can ill afford to lose—to the younger, the loss of a model well fitted to inspire earnest emulation.

Resolved, That the association tender their deepest sympathy to his sorrowing father and mother, and that this note be entered on our minutes and a copy be sent to the family. Henry P. Loomis, J. Clifton Edgar, Austin Flint, Jr., Committee.

State Hospital for Tuberculosis.—The following instructions have been forwarded: The trustees of said hospital to be appointed under and pursuant to the provisions of the act of incorporation, and their successors, are hereby given power and authority to receive therein patients who have no ability to pay, but no person shall be admitted to the hospital who has not been a citizen of this State for at least one year preceding the date of application. Every person desiring free treatment in said hospital shall apply to the local authorities of his or her town, city or county having charge of the relief of the poor, who shall thereupon issue a written request to the superintendent of said hospital for the admission and treatment of such person. Such request shall state in writing whether the person is able to pay for his or her care and treatment while at the hospital, which request and statement shall be kept on file by the superintendent of the hospital. Such requests shall be filed by the superintendent in a book kept for that purpose in the order of their receipt by him. When said hospital is completed and ready for the treatment of patients, or whenever thereafter there are vacancies caused by death or removal, the superintendent shall thereupon issue a request to an examining physician, appointed as provided for in section 12, in the same city or county, and if there be no such examining physician in said city or county then the nearest examining physician, for the examination by him of said patient. Upon the request of such superintendent said examining physician shall examine all persons applying for free admission and treatment in said institution, and determine whether such persons applying are suffering from incipient pulmonary tuberculosis. No person shall be admitted as a patient in said institution without the certificate of one of said examining physicians certifying that such applicant is suffering from incipient pulmonary tuberculosis. Admission to said hospital shall be made in the order in which the names of applicants shall appear upon the application book to be kept as above provided by the superintendent of said hospital, in so far as such applicants are subsequently certified by the said examining physician to be suffering from incipient pulmonary tuberculosis. Every person who is declared as herein provided to be unable to pay for his or her care or treatment shall be transported to and from the hospital at the expense of said local authorities. *Private Patients.*—Applicants for admission to this institution who are able to pay for their care and treatment are not required to obtain a written request from the local authorities having charge of the relief of the poor, but shall apply in person to the superintendent who shall enter the name of such applicant in the book to be kept by him for that purpose, as provided in section 13; and when there is room in said hospital for the admission of such applicant, without interfering with the preference in the selection of patients, which shall always be given to the indigent, such patients shall be admitted to the hospital upon the certificate of one of the examining physicians, which certificate shall be kept on file by the said superintendent. *Support of Free Patients.*—At least once in each month the superintendent of the hospital shall furnish to the comptroller a list countersigned by the treasurer of the hospital of all the free patients in the hospital, together with sufficient facts to enable the comptroller to collect from the proper local official having charge of the relief of the poor such sums as may be owing to the State for the examination, care and

treatment of the patients who have been received by the hospital and who are shown by the statement of such local official to be unable to pay for their care and treatment. The comptroller shall thereupon collect from the said local official the sums due for the care and treatment of each such patient at a rate not exceeding $5 per week for each patient. *Support of Private Patients.*—The trustees shall have power and authority to fix the charges to be paid by patients who are able to pay for their care and treatment in said hospital or who have relatives bound by law to support them, who are able to pay.

Transfer of Sanitary Inspectors.—Commissioner Darlington transferred all the five sanitary superintendents in the Greater City last week. "For the good of the service," is the reason ascribed by Dr. Darlington. The changes were: Dr. Patrick J. Murray, from Brooklyn to Queens; Dr. Walter Bensel, from Manhattan to Brooklyn; Dr. Gerald Sheil, from the Bronx to Manhattan; Dr. John T. Sprague, from Richmond to the Bronx; Dr. John P. Moore, from Queens to Richmond. When Dr. Darlington was questioned to-day about the changes he declined to discuss them other than to say they were made "for the good of the service," in the department—the stereotyped reason. The order went into effect to-day. Dr. Bensel, who took charge of the Brooklyn office immediately, laughed at the idea that there had been any politics in the shake-up. "I'm no politician myself," said he, "but I don't see where the politics comes in on this. There have been other shake-ups just like this one. There was one last summer. I got a taste of Brooklyn, and later was sent to Queens, the Bronx, and Richmond in succession. It has been the custom to give all the assistant sanitary superintendents a chance to get acquainted with the work in Manhattan. Whenever a new man is put in there everybody moves along."

PHILADELPHIA.

Surgeon General of Pennsylvania.—Dr. Joseph K. Weaver, of Norristown, has been promoted from division surgeon of the Pennsylvania National Guard to surgeon-general and chief of the medical department, with the rank of colonel. Major G. H. Halberstadt, of Pottsville, has been reappointed surgeon of the Third Brigade and Dr. J. C. Biddle assistant surgeon of the Eighth Regiment.

Tablets in Honor of Noted Physicians.—Memorial tablets to Drs. S. Weir Mitchell and Horatio C. Wood have been placed in the new medical laboratories of the University of Pennsylvania. The former was erected by Provost and Mrs. C. C. Harrison; that to Dr. Wood was dedicated to him by the trustees of the university in recognition of his services to the institution.

To Prevent Fourth of July Casualties.—The State Board of Health has sent a communication to the Mayor or Chief Burgess of every city and township in the State calling attention to the laws regarding the sale and use of firearms and fireworks; this is for the purpose of diminishing if possible the mortality from Fourth of July accidents.

Appointment of Dr. Lloyd.—Dr. James Hendrie Lloyd has been appointed visiting neurologist to the Philadelphia Hospital at Blockley. Dr. Lloyd formerly served on the nervous staff for thirteen years, but resigned in 1900.

CHICAGO.

Commencement Exercises of Rush Medical College.—This college, which is affiliated with the University of Chicago, held its commencement exercises June 15, when degrees were conferred on a class of 107. The Doctorate address was delivered by Dr. Charles G. Stockton, of Buffalo, N. Y.

Increased Endowment.—The Chicago-Farmington Society held a lawn fête in Winnetka recently, at which $2,000 was raised to complete the endowment of the Sarah Porter room in the Passavant Memorial Hospital.

Election of Dr. Murphy.—Dr. John B. Murphy, of this city, was recently elected President of the Chicago Medical Society.

GENERAL.

World's Fair Emergency Hospital Library.—The **Medical News** may be found on file in the library of the Emergency Hospital at St. Louis this summer.

Sanitation at Panama.—Aboard the Panama Railroad steamship Alliança, which sailed last week for Colon, were Chief Engineer J. F. Wallace and Dr. W. G. Gorgas and a staff of sanitarians and nurses who are going to do preliminary work on the Panama Canal route. Dr. Gorgas said that within a year he would have the canal strip as healthful as Cuba. He will establish sewerage and drainage systems and exterminate mosquitoes and other disease carrying insects. A call will presently be issued for volunteer physicians and surgeons to serve in the Panama Canal zone under contract with the Government. The Army and the Navy Departments will assign surgeons and doctors to duty in this region, but as there are to be not less than 50,000 men employed in the canal construction work, it is evident that outside medical aid will very soon be needed. This need opens an opportunity for graduates from medical schools who have not yet established themselves in practice. These should be physically sound young men with a good knowledge of medicine and surgery, and well qualified in the specialties of hygiene and modern sanitary science. The service involves serious risks, but no true physician ever hesitated to devote his life to the duty of alleviating the ills that flesh is heir to in obedience to the call of his perilous profession.

Census Returns.—An abstract of the census for 1900 has just been made public. Among the many significant facts to be obtained by an analysis of the figures a few bearing on medico-social topics are noteworthy. Some on marriage show that akin to the distribution among families is the matter of marital condition. In 1900 the percentage of married among all persons fifteen years or older was 55.5; of single, 36; of widowed, almost eight per cent., and of divorced, four-tenths of one per cent. To judge from the figures the coast States are the best for marriageable women, 60 per cent. being wives against 59 per cent. in the Central West and 54 per per cent. in the East. Contrariwise the Pacific coast shows the smallest per cent. of married men, 45 per cent., against a general average of 55 per cent. in the East and Middle West. Of all the States in the Union Vermont has the smallest per cent. of unmarried males over fifteen years of age, 35 per cent. Maine is not far behind with 36. The national average exceeds 40 and New York State is below it, 37.6. Of unmarried women New Mexico has less than 20 per cent., as compared with an average of 31 for the country. Massachusetts has the largest number of bachelor girls, 37 per cent., followed closely by Rhode Island, and then, strangely enough, by Virginia and Maryland. A total of 1,178,000 widowers is reported in 1900, as against a total of 2,717,000

widows. The number of divorced men, still unmarried, was 84,000 and the number of divorced women was 114,000. It is not surprising that density of population in the East is becoming one of the notable features of American life. Rhode Island has 407 persons to every square mile, and Massachusetts follows closely with 348. New York has but 152, but her per cent. of increase in population is rapidly rising, being three per cent. in 1890-1900 above that of the previous decade and five per cent. above that of 1870 to 1880. At the present time there are living in the so-called rural districts of New York State barely 27 per cent. of her population. This is far greater than the record in Rhode Island, of five per cent., or of Massachusetts with 8.5, toward which the trend is very rapid.

Trend in Mortality Statistics. — Among other striking facts brought into prominence by the last census it is demonstrated by exact figures from a so-called "registration area," comprising those sections of the United States which have accurate reports, that the increase in pneumonia deaths from 1890 to 1900 was five per cent., of heart disease 12 per cent., of kidney disease 44 per cent., of apoplexy 17 per cent., and of cancer 12 per cent. On the other hand, the figures show a decrease in deaths from consumption of nearly 55 per cent. and of bronchitis 26 per cent. A marked illustration of the effect of better knowledge of infantile diseases and the growing use of antitoxin is the large decrease in deaths from those causes. Thus the decrease in deaths from cholera infantum from 1890 to 1900 was 31 per cent., of diphtheria 34 per cent. and of convulsions 23 per cent. Some rather common ideas as to the prevalence of diseases in certain sections are dispelled by these figures. Consumption, supposed to be a cold climate disease, had in 1900 an average number of deaths in New York State of 194 to 100,000 population. In the same year this disease had in Vermont, a much colder State, 152 deaths to 100,000 population, and in the District of Columbia, a much warmer place, 305 deaths to 100,000 population.

Medical Department of the Congress of Arts and Sciences at St. Louis.—The plan and purpose of this Congress deviate so far from traditional lines that some explanation may be necessary to show how it should interest the medical profession. It is primarily a congress of scholars rather than of specialists. It is divided into 24 departments, one of the strongest of which is Medicine. Yet it is not intended to be a distinctly medical assemblage, but, as we have indicated, a congress of medical scholars. The Department of Medicine is divided into 12 sections, embracing the principal fields covered by the subject. These do not include Embryology, Anatomy, Physiology or Bacteriology,—subjects which are embraced in the department of Biology,—but which, it may be expected, will be of equal interest to medical scholars. The order of proceedings will be most easily understood if set forth in detail. The Department of Medicine will be opened on Tuesday, September 20, under the chairmanship of Dr. William Osler, with two general addresses by Dr. W. T. Councilman, of the Harvard Medical College, and Dr. Frank Billings, of the Rush Medical College. One of these speakers will review the progress of Medicine during the past century, and the other will treat its fundamental conceptions. On Wednesday morning, September 21, a section of Public Health will meet under the presidency of Dr. Walter Wyman, Surgeon-General of the U. S. Marine Hospital Service. It will be addressed by Professor W. T. Sedgwick, of the Massachusetts Institute of Technology, and Dr. Ernst J. Lederle, formerly Commissioner of Health of New York City. Communications relating to the subject are also expected from several eminent members of the profession. A section of Otology and Laryngology will meet at the same time: Chairman, Dr. Glasgow, of St. Louis; principal speakers, Sir Felix Sémon, of London, Physician Extraordinary to the King, and Dr. J. Solis-Cohen, of Philadelphia.

In the afternoon a section of Preventive Medicine will meet, under the chairmanship of Dr. Mathews, President of the Kentucky Board of Health. It will be addressed by Professors Ronald Ross, of Liverpool, and Celli, of Rome. Some question has been raised against the advisability of separating these two sections. This separation is, however, of no practical importance, as all interested may equally well attend both. At the same time with Preventive Medicine, a section of Pediatrics will meet under the chairmanship of Dr. Rotch, and will be addressed by Escherich, of Vienna, Jacobi, of New York, and others. On Thursday morning, there will be meetings of sections of Pathology and Psychiatry. The chairmen of these sections are Drs. Simon Flexner and Edward Cowles. Marchand, of Leipzig, and Orth, of Berlin, accepted invitations to address the section of Pathology, but it is not certain whether both will be able to attend. Psychiatry will be treated by Ziehen, of Berlin, and Dana, of New York. In the afternoon a section of Neurology will meet, under the chairmanship of Professor L. F. Barker, of Chicago, and will be addressed by Kitasato, of Tokio, and Putnam, of Boston. It seems hardly necessary to enter with like detail into the proceedings of the remaining sections on Friday and Saturday. It will suffice to copy the subjects, chairmen and speakers from the program, as follows:

Therapeutics and Pharmacology.—Chairman: Dr. Hobart A. Hare, Jefferson Medical College. Speakers: Sir Lauder Brunton, F.R.S., London; Professor M. E. O. Liebreich, University of Berlin.

Internal Medicine (Friday afternoon).—Chairman: Professor F. C. Shattuck, Harvard University. Speakers: Professor Clifford Allbutt, F.R.S., University of Cambridge; Professor W. S. Thayer, Johns Hopkins University.

Surgery (Friday morning).—Chairman: Professor Carl Beck, Post-Graduate Medical School, New York. Speakers: Professor Frederic S. Dennis, Cornell Medical College, New York. (Not finally selected.)

Gynecology (Saturday morning).—Chairman: Professor Howard A. Kelly, Johns Hopkins University. Speakers: Dr. L. G. Richelot, Member of the Academy of Medicine, Paris, France; Professor J. C. Webster, Rush Medical College, Chicago.

Ophthalmology (Saturday afternoon).—Chairman: Dr. G. C. Harlan, Philadelphia, Pa. Speakers: Dr. Edward Jackson, Denver, Colo.; Dr. George M. Gould, Philadelphia, Pa.

On the general plan of the Congress, one of the two principal speakers in each section will treat of the relation of the subject to other departments of knowledge; and the other, of its present problems. Besides the principal speakers, it is expected that each section will receive several brief communications from leading members of the profession in attendance at the meetings.

It will be seen that the division into sections is one of subjects rather than of men. The chairmen and speakers will be different in different sections.

but the attendance will be the same, except in the sections holding their meetings at the same time.

It is hoped that this program will prove attractive to such leading members of the medical profession in America as may be able to visit St. Louis and take part in the proceedings of the Congress.

Examination for Army Medical Service.—The examination of applicants for commission in the Medical Corps of the Army will be materially modified after July 1, 1904, when the amended regulations governing the matter will go into effect. Immediate appointment of applicants after successful physical and professional examination—the latter embracing all subjects of a medical education—will be discontinued; thereafter applicants will be subjected to a preliminary examination and a final or qualifying examination with a course of instruction at the Army Medical School in Washington intervening. The preliminary examination will consist of a rigid inquiry into the physical qualifications of applicants and written examination in the following subjects: Mathematics (arithmetic, algebra and plane geometry); Geography; History (especially of the United States); Latin grammar and reading of easy Latin prose; English grammar (orthography, composition); Anatomy; Physiology; Chemistry and Physics; Materia Medica and Therapeutics; Normal Histology. The subjects in general education above mentioned are an essential part of the examination and cannot under any circumstances be waived. The preliminary examination will be conducted concurrently throughout the United States by boards of medical officers at most convenient points; the questions submitted to all applicants will be identical thus assuring a thoroughly competitive feature, and all papers will be criticised and graded by an Army Medical Board in Washington. Applicants who attain a general average of 80 per cent. and upwards in this examination will be employed as Contract Surgeons and ordered to the Army Medical School for instruction as candidates for admission to the Medical Corps of the Army: if, however, a greater number of applicants attain the required average than can be accommodated at the school the requisite number will be selected according to relative standing in the examination. The course of instruction at the Army Medical School will consist of lectures and practical work in subjects peculiarly appropriate to the duties which a medical officer is called upon to perform. While at this school the students will be held under military discipline, and character, habits and general deportment closely observed. The final or qualifying examination will be held at the close of the school term and will comprise the subjects taught in the school together with the following professional subjects not included in the preliminary examination: Surgery; Practice of Medicine; Diseases of Women and Children; Obstetrics; Hygiene; Bateriology and Pathology; general aptitude will be marked from observation during the school term. A general average of 80 per cent. in this examination will be required as qualifying for appointment, and candidates attaining the highest percentages will be selected for commission to the extent of the existing vacancies in the Medical Department. Candidates who attain the requisite general average who fail to receive commissions will be given certificates of graduation at the school and will be preferred for appointment as medical officers of volunteers or for employment as contract surgeons; they will also be given opportunity to take the qualifying examination with the next succeeding class. It is not thought that, for the present at least, the number successfully passing the preliminary examination will be greater than can be accommodated at the Army Medical School, nor that the number qualifying for appointment will exceed the number of vacancies. If, however, the class of candidates qualifying should be larger than reasonably thought, the young physicians who fail to receive commissions will not have wasted their time, as the course of instruction at the school, while in a large measure specialized to army needs, is such as will better fit them for other professional pursuits, and furthermore they will have received a fair compensation while under instruction. Admission to the preliminary examination can be had only upon invitation from the Surgeon-General of the Army, issued after formal application to the Secretary of War for permission to appear for examination. No applicant whose age exceeds thirty years will be permitted to take the examination, and the authorities at the War Department desire it distinctly understood that this limit of age will be rigidly adhered to. Hospital training and practical experience are essential requisites, and an applicant will be expected to present evidence of one year's hospital experience or its equivalent (two years) in practice. The first preliminary examination under the amended regulations above referred to will be held about August 1, 1904; those desiring to enter the same should at once communicate with the Surgeon-General of the Army, Washington, D. C., who will be pleased to furnish all possible information in regard thereto.

Boric Acid in Food.—The Department of Agriculture has just issued, writes the *Tribune*, a report giving the result of the experiments made last year in the influence of boric acid and borax on digestion and health. During a period of six months 12 young men submitted themselves to the observation of experts and gave a test of the effect of natural and preserved foods upon the system. The trial seems to have demonstrated that, while the human body can endure considerable quantities of boric acid in food without serious results, yet the steady absorption of the drug is unhealthful and especially likely to work injury to persons of a delicate constitution. The report shows that boric acid taken in food is eliminated from the system almost entirely by the kidneys, and that, as the maximum traces of it are found only three days after administration, the drug meanwhile is present in the circulation. It is not shown that the boric acid has any directly deleterious effect upon the kidneys, but anybody who realizes the prevalence of kidney disease under the unnatural strain upon those organs of the common mode of life, with its nervous tension and overeating, will feel it unwise to subject them unnecessarily to the work of eliminating from the body a chemical product which has no natural place there and with which they should not be called upon to deal. The department further finds that the continued use of boric acid, even in small quantities which produce no immediate palpable effects and are not noticeable to the taste, results in loss of appetite, bad feeling, fulness in the head and distress in the stomach. Persons regularly using borated food tend to lose weight, and analysis shows that a smaller proportion of borated than of natural food is digested and made available for the body's uses. The report is thoroughly conservative. It makes no sensational charges that food is poisoned by borax. It admits that articles of only occasional use may be preserved with the aid of boric acid without harm, and it con-

cedes that meats shipped raw and not kept too long may without bad results receive an external coating of preservative which excludes germs of decomposition without penetrating far beneath the surface. Nevertheless, it is emphatic in its warning against the habitual use of preserved foods, and in its demand that such foods be honestly labeled that the consumer may know what he is getting. This phase of the subject is particularly important. The consumer is now at the mercy of the producer. If he is an invalid, he may be seriously injured by borated foods which he buys, supposing them to be pure. He should have a chance to know whether he is getting natural or preserved food. If his constitution will stand the latter, well and good. If it will not, what is to him a poison should not be secretly and fraudulently administered to him. It may be that for the preservation of some articles boric acid is necessary, or at least preferable to the chemical conditions which would be developed without antiseptic properties.

The burden of proof on that point, however, rests upon the producer. He should be compelled to meet this obligation, to specify his use of boric acid and commend it to favor, and not allowed to sell goods under false pretenses. The report says: "It is undoubtedly true that no patent effects may be produced in persons of good health by the occasional use of preservatives of this kind in small quantities, but the young, the debilitated and the sick must not be forgotten, and the safe rule to follow is to exclude these preservatives from foods for general consumption." This can only be done by compelling publicity in the use of the preservatives. Otherwise, in spite of all precaution, those who would be injured will unwittingly use them to the detriment of their health.

Crime Among the Colored Race.—At the last annual meeting of the National Society of Charities and Correction, held last week, among the interesting papers was one on this subject. Quoting the statement that a single sentence to the chain gang, no matter how trivial the offense, usually makes the victim a criminal for life. William E. Benson, superintendent of Kowaliga Institute, Ala., made a plea for educational measures of the right sort in preventing crime among colored people. He presented a study of conditions in a small Alabama community where two-thirds are negroes which apparently flatly contradicted the old charge, that among them education and criminality go hand in hand. "In the distant rural communities of the South," said Superintendent Benson, "there are no organized charities, no institutions for rescue work, no juvenile reformatories for colored children, consequently the schools and churches must be the source of their moral uplift and inspiration. Negro boys and girls who are criminally inclined must either find their regeneration in private schools or eventually on the prison farm. Therefore the necessity for systematic preventive effort is pressing because when they once commit crime, little discrimination is made in their punishment. It is meted out according to their crime rather than their criminal record. The young and careless mischiefmaker is imprisoned in the same cell and confined to the same prison farm as the old and hardened thug. It is asserted upon good authority that a single sentence to the chain gang usually makes the victim a confirmed criminal for life. In considering the factors of preventive work, let us first determine what are the uplifting influences in communities where dependency and delinquency have been reduced to a minimum, and then introduce as fast as possible these conditions into other communities. Let us ask who are the negroes that commit crime and go to prison. Are they really the educated, self-respecting and industrious who have learned to use their hands and brains in making an honest livelihood, or, do they come from the class who are shiftless, lazy and illiterate?

"In my own community in Alabama, we maintain a good school which gives not only an English education, but seeks to train boys and girls to do intelligently and profitably the common work of life. There have been 42 arrests within the last eight years—35 negroes and seven whites. These were all cases which came within the jurisdiction of the local magistrate and were of a comparatively trivial nature. The charges were as follows: Road defaulters 3, defamation 1, disposing of mortgaged property 2, assaults to murder 17, cruelty to animals 2, bastardy 1, obtaining goods under false pretenses 1, disorderly conduct 1, arson 2, petty larceny 8, carrying concealed weapons 1, vagrancy 1, alleged assault to rape 11, manslaughter 1. In the cases of the latter two charges, the defendants were acquitted on account of lack of evidence. Only one of these arrests was committed to jail and he was never sentenced, the prosecution failing to appear. There has not been a single murder case, with the exception of an accidental killing, within the last ten years and not one of our race has ever been convicted for rape or any serious crime whatsoever within the last twenty years.

This record includes a small community two and a half miles square where nearly two-thirds of the population are negroes. Further out into the county around us, where there are no schools, we find the record of both races running the whole gamut of crime from petty larceny to murder. There have been in all 125 convictions in the county between the years 1900 to 1904, 105 negroes and twenty whites. Out of 47 convicted, 20 were sentenced to hard labor for the county for terms of two to six months and 27 to the state penitentiary for terms of from one to twenty years. Seventy misdemeanors were committed by negroes and four by whites in the same period, while 16 felonies were committed by whites and 35 by negroes. In other words, the rate of criminality among negroes, which is very high in the lighter offenses, decreases in the deeper crimes, while the rate among the whites, which is very low in the lighter offenses, increases in the deeper crimes.

OBITUARY.

Dr. John H. Dorn, whose home for many years was at 39½ Washington Square South, New York City, died suddenly in London on Friday of heart disease. He retired from active practice eight years ago, largely on account of his health. Dr. Dorn, who was born in Johnstown, N. Y., in 1842, entered the Union Army at the outbreak of the war, and served two years with a New York regiment. He went to Albany at the conclusion of his military service, and entered the Albany Medical College, from which he was graduated in 1865. He began practising in the Fifteenth Ward in this city, and in 1875 was appointed a police surgeon. He was retired as such in 1896. For twenty-five years he was Secretary of the Lincoln Club of the Fifth Assembly District.

Dr. L. A. Lowden, of Indianapolis, died June 21 at his home.

CORRESPONDENCE.

OUR LONDON LETTER.

LONDON, June 4.

INTERIM REPORT OF THE ROYAL COMMISSION ON TUBERCULOSIS—THE PURSUIT OF NOVELTIES IN MEDICINE—MEDICAL OFFICERS OF HEALTH—"EUGENICS"—HYGIENE IN THE HAIRDRESSER'S SHOP.

IMMEDIATELY after Koch's subversive address on human and bovine tuberculosis at the Congress held here in 1901 a Royal Commission was appointed to study the whole question. The Commissioners chosen were Sir Michael Foster, Professor of Physiology at Cambridge, Chairman; Dr. Sims Woodhead, Professor of Pathology in the same university; Dr. Sidney Martin, Professor of Pathology, University College, London; Dr. John McFadyean, Professor of Comparative Pathology in the Royal Veterinary College, and Dr. Boyce, Professor of Pathology, University College, Liverpool. The specific questions which they had to consider were the following: (1) Whether the disease in animals and man is one and the same; (2) Whether animals and man can be reciprocally infected with it; (3) Under what conditions, if at all, the transmission of the disease from animals to man takes place, and what are the circumstances favorable or unfavorable to such transmission. They decided that their best course would be to begin their work, not by collecting opinions, but by making experimental investigations for themselves. Their first line of inquiry was to discover the effects produced by introducing into the body of the bovine animal (calf, heifer, cow) either through the alimentary canal as food, or directly into the tissues by injection, tuberculous matter of human origin, *i.e.*, material containing living tubercle bacilli derived from various cases of tuberculous disease in the human subject; and how far those effects resemble or differ from the effects produced by the introduction into the bovine animal under similar conditions of tuberculous matter of bovine origin, *i.e.*, material containing living tubercle bacilli obtained from cases of tuberculosis in the cow, calf, or ox. The Commission has been at work for nearly three years, and we had begun to wonder whether it was to sit as long as the last Vaccination Commission to which at one time it seemed that the description of Theseus in Tartarus, *Sedet aeternumque sedebit,* might be applicable. The publication of an interim report on June 1 therefore came as a surprise. The Commissioners say they have been moved to make their results known in this way because they are so striking. Their experiments, details of which are reserved for a further report, have led them to the conclusion that "tubercle of human origin can give rise in the bovine animal to tuberculosis identical with ordinary bovine tuberculosis." In their experiments they made use of more than twenty different "strains" of tuberculous material of human origin and two hundred animals. They compared the effects produced by these with the effects produced by several different strains of tuberculous material of bovine origin. In the case of seven of the "strains" of human origin, the introduction of the human tuberculous material into cattle at once gave rise to acute tuberculosis, the disease in some instances being of great severity. In the case of the remaining strains, the bovine animal into which the tuberculous material was first introduced was affected to a less extent. Nevertheless, tuberculous material from the bovine animal thus affected introduced into other bovine animals and into guinea-pigs, in the case of five of these strains ultimately gave rise in the bovine animal to general tuberculosis of an intense character. The Commissioners say: "We have very carefully compared the disease thus set up in the bovine animal by material of human origin with that set up in the animal by bovine material, and so far we have found the one, both in its broad general features, and in its finer histological details, to be identical with the other. We have so far failed to discover any character by which we could distinguish the one from the other. The result at which we have arrived seems to us to show quite clearly that it would be most unwise to frame or modify legislative measures in accordance with the view that human and bovine tubercle bacilli are specifically different from each other, and that the disease caused by the one is a wholly different thing from the disease caused by the other." Briefly put, the conclusion of the British Commission is against Koch's view that human beings are but slightly, if at all, susceptible to infection by bovine tuberculosis, and that the danger from the milk of a tuberculous cow is so small as to be practically a negligible quantity. It may be recalled that these views caused a great sensation at the Congress, as doubtless they were intended to do. As soon as Koch sat down, Lister rose and said that if the conclusions of the German investigator were correct, the means of preventing tuberculosis would be greatly simplified; but, on the other hand, it would be a very serious and grievous matter if the endeavors which were being made to provide purity of milk supply should be relaxed, and that then the conclusion should be found not altogether correct. For his own part he must frankly say that the evidence which Professor Koch had brought forward was not very satisfactory. The dairymen were of course greatly pleased at the prospect opened up by Koch's deliverance of a relaxation of the stringent supervision of their products now enforced by law. Medical opinion however was strong enough to prevent any action in that direction being taken till conclusive evidence in support of Koch's teaching was forthcoming.

Sir Dyce Duckworth, one of the pillars of that dignified but somewhat effete institution, the London College of Physicians, has lately delivered his soul in denunciation of "the modern pursuit of novelties in medicine." He thinks physiology as now taught by specialists is too purely scientific to be of much use to practitioners, and occupies too large a space in the medical curriculum. On the other hand he complains that the study of botany is hardly reckoned within the compass of modern medical education. He rarely comes across a pupil who knows the natural order of plants or could name properly any of our common hedgerow flowers. He regards this as a lamentable decadence and a distinct loss since he has always reckoned a training in botany as one of the very best for the future medical man. In this Sir Dyce Duckworth is in direct opposition to Huxley who proposed to lighten the course of studies by throwing overboard not only botany but zoology and even materia medica which he said was as unnecessary to a physician as a knowledge of cutlery to a surgeon. Duckworth has a good word to say for bleeding in suitable cases and he points to the fact that the oculist who sees what he is doing better than the physician never gave up the practice in deference to those who condemned it as an enfeebling procedure. He admits that mercury was grossly abused in the good old days, but he thinks that the calomel which our predecessors employed was a more efficient drug than "the chemically, perhaps too chemically, pure salt" used to-day. Duckworth mourns the passing of John Abernethy's famous blue pill and black draught, which have been replaced, "often inefficiently," by doses of aperient waters. He also finds comfort in that blessed word "diathesis" at which modern science is too apt to point the finger of scorn. The most mis-

chievous element in our modern system of therapeutics, however, is declared to be "a perpetual pursuit of novelties, an untiring effort to produce new remedies, the enjoining new methods of dietary, and with all this, the inevitable loss of any well-acquired principles of treatment as founded on long experience of others, or of personal experience laboriously acquired for oneself." Duckworth plaintively says that he is always meeting with perscriptions composed of many drugs of whose existence he has no knowledge, and which are in no pharmacopœias. Every week he is informed from German and American sources of some new synthetical compounds and so-called foods, generally with unpronounceable names, which he is invited to use on the strength of monstrous assertions and the raw experience of some young and imperfectly-trained physicians. It is all very sad and very bad, and unworthy of well-trained practitioners. The pity of it is "we have frivolous minds amongst us at work in therapeutics." There is of course a large amount of truth in this, but the Athenian curiosity to hear of some new thing is by no means exclusively modern. Did not old Broussais, speaking of new specifics say, *Hâtez-vous de prendre ce remède pendant qu'il guérit?* Duckworth urges strongly the value and importance of practitioners acquiring a full knowledge of the pharmacopœia, and of the art of prescribing appropriately. As an examiner he is constantly aghast at the ignorance of these subjects displayed by candidates. There are, he says, fashions in diseases as in drugs. "To-day we find weak hearts asserted to be very prevalent; lately gastric dilatation was perpetually before us; then neurasthenia; next, phimosis became of extraordinary frequency, while typhlitis and nasopharyngeal adenoid growths are heard of on all sides in society. To-morrow there will be something else." But we must be calm, and level-headed, to see all things in due proportion, to hold fast by all we have learned to see as most certain and dependable in medicine. In expressing these sentiments Duckworth declines to be regarded as an old Tory in medicine, or a pre-scientific fossil. Well, we need not call him a fossil; he is only a particularly fine specimen of British Conservatism.

Medical officers of health are not only very poorly paid, but hold their appointments for the most part from year to year and therefore at the mercy of the sanitary authorities whose servants they are. This fact goes far to nullify their usefulness to the public. If a zealous officer is impelled by his conscience to condemn houses or tenements as unhealthy, he naturally makes enemies of the owners of the property who often are members of the body which appoints him. Quite recently an able officer to an out-lying London borough, who had reported adversely on certain foods submitted to him by the inspector, was refused re-election. It happened that the seizures had been made from the premises of the chairman of the health committee, who had used his influence to supplant the doctor. Insanitary areas have been passed over by inspectors under fear of dismissal, and when the medical officer has dared to report he has been deprived of office. A notorious scandal arose in a seaside town where the mayor had concealed the fact that his two daughters and a servant were down with smallpox. Certain troubles ensued, and the local officer, having had his attention called to the matter, made his report. Within a month he was not only dismissed from his office, but this adverse vote made longer stay in the borough utterly impracticable. In another case a clever young practitioner was literally hounded out of a small South Wales district because he attributed a certain epidemic of fever to the use of water on a certain nobleman's estate, and forwarded samples together with his report to the Local Government Board. From these facts, which could be multiplied indefinitely, it is evident that in the interest of the public health it is imperatively necessary that medical officers of health should be independent of the malice or whims of sanitary authorities which are largely composed of local tradesmen and owners of house property and should be made secure in the tenure of their office. The Incorporated Society of Medical Officers of Health is therefore taking action to secure this. The attention of Parliament is to be called to the subject and there is a good prospect of the desired reform being effected, as it has the support of Mr. Arthur Balfour, the Prime Minister, Sir Michael Hicks-Beach, the late Chancellor of the Exchequer, and Sir Walter Foster, ex-Parliamentary Secretary of the Local Government Board. In 1869 the Royal Sanitary Commission recommended fixity of tenure, but the recommendation has been allowed to remain the expression of a pious opinion.

Mr. Francis Galton whose name is well-known by his researches on finger marks and his studies of various problems of heredity, recently delivered an address on "Eugenics," which he explained to be the science which dealt with all influences that improved the inborn qualities of a race, and with those that developed these qualities. The aim of eugenics, he says, was to bring as many influences as could be reasonably employed to cause the useful classes in the community to contribute more than their proportion to the next generation. It seemed to be the tendency of high civilization to check fertility in the upper classes, through numerous causes, some of which were well known, others were inferred, and others, again, were wholly obscure. But it might be expected that types of our race would be found to exist which could be highly civilized without losing fertility, and they might even become more fertile under artificial conditions, as was the case with domestic animals. If marriages unsuitable from the eugenic point of view were banned socially, or even regarded with the unreasonable disfavor which some attached to cousin marriages, very few such unions would take place. The improvement of our stock seemed to Mr. Galton one of the highest objects we could reasonably attempt. He saw no impossibility in eugenics becoming a religious dogma among mankind, but its details must first be worked out sedulously in study. The first and main point was to secure the general intellectual acceptance of eugenics as a hopeful and most important study. In the discussion which followed Mr. Benjamin Kidd (author of *Social Evolution*) pointed out that much obscurity at present existed in sociological studies from confusing two entirely different things—namely, individual efficiency and social efficiency. Judging from what one sometimes read, many of our ardent reformers would often be willing to put us into lethal chambers if our minds and bodies did not conform to certain standards. Our methods of knowledge were as yet admittedly very imperfect. He believed that much that Mr. Galton anticipated would be realized. But he thought we must go slowly with our science of eugenics, and that we must take care, above all things, that it advanced with, and did not precede, a real science of our social evolution. Even the highest representatives of the various social sciences must realize that, in the specialized study of sociology as a whole, they were scarcely more than distinguished amateurs. Otherwise, in few other departments of study would there be so much danger of incomplete knowledge, and even of downright quackery, clothing itself with the mantle and authority of science. Mr. H. G. Wells expressed the belief that the conscious selection of the best for reproduction would be impossible, and that to propose it was to display a fundamental misunderstanding of what individuality

implied. It was in the sterilization of failures, and not in the selection of successes for breeding, that the possibility of an improvement of the human stock lay.

Dr. Collingridge, Medical Officer of the City of London, has recently grappled with a somewhat difficult problem. He proposes to establish a code of regulations to secure antisepsis in the hairdresser's shop. Shaving brushes are to be dipped in an antiseptic solution before use; the operators, or "artists" as they call themselves, are to put on a fresh apron for each customer; razors are to be sterilized and hairbrushes are to be washed after use. The hair-dressing fraternity as a class do not view these proposals with favor, and it remains to be seen whether the City Fathers are sufficiently progressive to support their health officer.

SOCIETY PROCEEDINGS.

AMERICAN SURGICAL ASSOCIATION.

Twenty-fifth Annual Meeting, held at St. Louis, Mo., June 14, 15 and 16, 1904.

FIRST DAY—JUNE 14TH.

What are the Minimum Requirements for Aseptic Surgical Operations?—Dr. George H. Monks, of Boston, said that looseness of packing dressings in the autoclave was perhaps the most frequently neglected important factor in establishing asepsis. Unless dressings are given free space, steam sterilization is of no avail, no matter how long it may be continued,—if loose, however, fifteen minutes to a half hour at fifteen pounds will serve to kill spores as well as vegetated germs.

He suggested the introduction into operating rooms of the vacuum sweeping process, such as is used to rid sky-scrapers of their dirt. It is rapid and causes no dust. Air infection is a serious factor —more so than at present considered. Septic material should be disposed of by strictly antiseptic methods. In later years, the preparation of the skin of the operation area had undergone much simplification; he no longer considered the application of antiseptics to this part desirable or advantageous—simple scrubbing with soap and water followed by 70 per cent. alcohol serving the purpose better than prolonged soaking with antiseptics. This percentage of alcohol kills germs much more rapidly than any other. Gloves should always be worn by the operator. Ten minutes boiling of instruments is sufficient, but here, as in the case of the autoclave, unless the heat be allowed to come in actual contact with the germ-contaminated surface, the effort at sterilization is vain. To this end, therefore, it is necessary to unlock and take apart every instrument which is boiled. Caps and masks are, in the author's opinion, most important adjuncts. He showed a form of the latter used at Vienna and stated that it was probably the best of its kind. He advocated the free use of saline solution as a substitute for more irritating irrigations.

Dr. A. J. Ochsner, of Chicago, spoke of the need of a simpler direct system. Above all, he said, the chief must be uniform under all conditions. Changes must not be haphazard, but must in all details be governed by a spirit of reasonableness. Receiving credit for all successes, the chief must be responsible for all failures. Successful asepsis depends largely on patient and continued scrubbing with soap and water. The night before the hands of all who are to take part in operating are thoroughly scrubbed. As a rule, irrigation of the wound is avoided at the Augustana Hospital. As to catgut, he has settled upon a form of iodoformized gut that has worked very satisfactorily. Careful observations at this institution led him long ago to conclude that air infection could be discounted to a very large degree; contact infection being by all odds the most common form of wound soiling. The hands are in most cases the agents of infection.

Some Studies in Asepsis.—Dr. Charles Harrington, of Boston, said that in an average operating room one hundred and twenty colonies to the square inch might be expected to deposit in an hour. It has often been said that sweat is infection. He has tried again and again to prove this, but has failed. It is apparently sterile. Saliva, on the contrary, is a most potent cause and source of infection. This is expelled chiefly by persons uttering the consonants d, k, p and t. Streptococci and staphylococci are the germs most frequently expelled in the saliva. As many as 4,375 having been counted in a single droplet of expelled saliva.

Fractional Sterilization.—For culture medium preparation this process is necessary, but for pathogenic sterilization it is useless. All such spores are killed in ten minutes if absolute contact of steam to exposed materials is ensured in the autoclave. Sporulation fails in the absence of suitable temperature and of water, therefore, if the fractional method were necessary, a special technic between the periods of exposure to heat would be necessary.

Hand Sterilization.—Potassium permanganate-oxalic acid method has long outlived its usefulness. It simply causes an oxidation of organic products, but that this is absolutely valueless may well be shown both by the fact that the process may be repeated almost indefinitely—the degree of blackening barely diminishing—as well as by actual bacteriological examination of the hands. The black coating, formerly considered so valuable an indicator of work well done, has been positively shown to be a most effectual bar to the accomplishment of sterilization. The author detailed his experiments with all the well-known solutions and showed how faulty is their action and how erroneous is the judgment of him who places faith in them. The free mercury ions are the factors of first importance in killing germs and their spores. Hydrochloric acid will increase the number and activity of these ions, but it is too irritating to use in practice.

Dr. De Forest Willard said that the value to the general surgeon of the laboratory findings, presented by Dr. Harrington, could not be adequately estimated. He agreed with Dr. Ochsner in that permanent assistants are a desideratum, but pointed out the fact that such a plan, if universally adopted, would seriously curtail the educational usefulness of all hospitals. The young generation must be taught, and this can be done only by a rotation of service. Operating rooms should be places near the roof; we are coming back to the old idea of Lister who placed such store on the importance of air infection.

Dr. C. B. Nancrede, of Ann Arbor, Mich., said that he had watched the development of asepsis for thirty-six years. Old ideas and old experiments were repeated again and again. The fact that inhibition of a germ is most difficult to distinguish from its death has led to many errors. Tissue resistance, that immeasurable something, is likewise a most potent factor. He places a five-minute sand-glass, commonly used by housewives to boil eggs, before each assistant and nurse, so as to ensure adequate scrubbing. The scrub until "hard boiled"

is reached. Last winter he caused 213 cultures to be taken from the hands of his operating staff with a result that seven grew. This showed 97 per cent. of sterility—this was reached by Weir's method of soda and chloride of lime.

A Chemical Study of Forty-one Operated Cases of Ulcer of the Duodenum.—Dr. W. J. Mayo and Dr. Christopher Graham, of Rochester, Minn., presented this paper. Dr. Mayo said that the striking fact elicited by this study was the proof it afforded of the frequency of the coexistence of duodenal and gastric ulcer. In 53⅓ per cent. of his patients the stomach was involved. Moynihan reports 23 per cent. Most duodenal ulcers are of the cicatricial type, as evidenced by the presence of broad adhesions walling off areas of chronic perforation. Duodenal ulcer is much more common than generally supposed. Its development is favored by the position of the organ as well as by other factors. The ulcer occurs, as a rule, within the first two inches of the gut. So frequent is the lesion as a complicating factor in gastric ulcer and in gall-bladder disease that the author recommends the use of an incision situated well to the right of the median line so that the duodenum, which is involved in at least one-half of such cases, may be explored and, if necessary, receive treatment.

Posterior Gastro-Enterostomy the Operation of Choice.—The anterior operation has been superseded at Rochester by the somewhat more prolonged but more satisfactory posterior. Even if this operation be employed, there is still a marked disposition to closure of the opening as a result of the increased pyloric lumen. Food is forced through the pylorus by the muscular action of the stomach. This mechanically dilates the part. Add to this the shrinkage of the inflamed walls, which begins as soon as they are given relative rest by the establishment of the artificial opening, and it is easy to see that it cannot be long, in most cases, before the pyloric opening which, at the time of the operation, may have been tightly sealed, becomes patent.

Classification.—Duodenal ulcers may be grouped under five heads: (1) Those occurring in conjunction with gastric ulcer; (2) with hepatic lesions, particularly gall-stone; (3) a large class in which acute perforation may take place; (4) one in which hemorrhage may supervene and (5) a small class characterized by a freedom from hepatic or gastric involvement.

Dr. E. Willis Andrews, of Chicago, cited a case in which he had employed the McGraw ligature to create a gastro-enterostomy. The patient died a year after the operation and the contraction of the opening proved the truth of Dr. Mayo's observations.

Dr. J. B. Murphy, of Chicago, said that Dr. Mayo had convincingly shown the frequency of duodenal ulcer. It produced, unlike its proto-type in the stomach, either absolutely no symptoms or, at best, the most vague evidence of its existence. The majority would for a long time have to be diagnosed upon the operating table.

Dr. Mayo, in closing, said that the so-called Robson ulcer of the stomach and of the duodenum were similar lesions and were too often confounded with gall-bladder disease. Eliminating the medical ulcers, duodenal ulceration is probably as common as gastric. Because of the difficulty of establishing a gastro-enterostomy which shall remain permanently patent and because of the danger of leaving a cicatrized base for possible future malignant degeneration, excision of the ulcer, rather than gastro-enterostomy, secured the operation of choice.

Seven Cases of Complete Removal of the Shaft of the Tibia, with Restoration of the Bone.—Dr. George Ben Johnston, of Richmond, Va., said that the striking factor elicited by a study of these cases was the differing degree of the virulence of the infection. He exhibited a complete series of photographs and radiograms which illustrated most convincingly what can be done by patience and skill in this department of conservative surgery. His illustrations showed how easy it became, in skilled hands, to actually mold the new bone to whatsoever form desired.

Dr. Willard said that under the reproachful term "rheumatism" most of the unfortunate childen suffering from osteomyelitis were condemned to suffer the agonies of tissue destruction until it was too late to save the bone. Operation should be done within the first forty-eight hours.

Dr. A. J. Ochsner advanced the proposition that the dead bone, which is usually removed from these, will in a large proportion of cases regenerate if kept clean and left *in situ*. He recalled one operation, four years ago, in which the fragment, consisting of almost the entire tibia, had grown fast and had given no trouble to date. He, therefore, advocated free incisions in these cases without bone resection. If the dead part does not grow fast it at least serves for a splint.

Second Day—June 15th.

Causes of Death after Abdominal Section.—Dr. Maurice H. Richardson, of Boston, said that to every surgeon of wide experience came occasionally but surely rare and unavoidable calamities which terminated in unexpected, unlooked-for death.

Pulmonary Embolism.—This condition and its evil associate, femoral thrombosis, are as inexplicable as they are to be dreaded. Neither has any bearing on wound infection, in fact, it is well known that each is more apt to occur in the course of an uneventful convalescence than otherwise. Have phlebitis and pulmonic embolism a common origin? Each, so far as can be determined at any rate, is aseptic, and each occurs typically after the most successful operations. It is possible that changes in the blood occur which are not evidenced by known methods of examining this tissue. But why should thrombosis of the left femoral occur so frequently after operations on the right side? That the two conditions are associated with each other and with some form of anemia is to be suspected, at least from the frequency of their occurrence in patients who have suffered prolonged hemorrhage.

Suppression of Urine.—This postoperative complication in patients whose kidneys are normal is not common and is rarely fatal; nevertheless it does occur with sufficient frequency to justify comment on our inability to prognosticate or to treat it. When it proves fatal it is probably a certain sign of preexisting renal disease which had been overlooked by the surgeon. Ether is usually not responsible.

Prolonged Capillary Hemorrhage.—This appalling sequel is most frequently seen after operations on the gall-bladder or its tracts. Blood-stained dressings persisting for some days beyond the usual has come to the author to suggest with painful certainty —death. In closing he said, that it was due the public to remind them that there yet lurked definite and uncontrollable dangers in the course of every operation of any import—as yet unhappily far be-

yond the reach or even the recognition of the surgeon.

Dr. L. S. McMurtry, of Louisville, spoke of the need of eliminating the baneful term "death from anesthetic," since in many cases autopsy, properly conducted, would show the definite cause of death to have been pulmonic embolism or some similar definite lesion. The laity should be taught that all operations are essentially not simple and uniformly successful. This has been the creed they have been taught and the altar at which they have been brought to worship in the recent years of marvelous surgical predominance and success. More time taken in the preparation of all except emergency cases would save many lives.

Dr. Robert Abbe, of New York, said that Keen had long ago called attention to the fact that the frequency of phlebitis on the left side was to be explained by the anatomical relation of the left vein. Most cases of left-sided phlebitis are mechanical in origin—representing a local stagnation of the venous current.

Dr. C. B. Nancrede said that he did not share with Dr. Richardson his dread of capillary hemorrhage. One case, he recalled, was operated on for jaundice and bled in this manner for five weeks without fatal termination.

Dr. W. J. Mayo said that in his experience phlebitis occurred in two per cent. of abdominal cases. Many are so slight as not to give any symptoms. One per cent. present the typical symptoms, the rest have only a little stiffness and pain. He had recently seen two cases of undoubted pulmonary hemorrhage recover and he had made the interesting observation that in each there was undoubted cardiac disease. A good-sized leak or a sudden break in compensation saves the heart until a readjustment of the circulation can be established. Each of the patients, he cited, had phlebitis subsequently.

Papillary Tumors of the Ovary.—Professor Samuel Pozzi, of Paris, France, said that a great number of women had been sacrificed to the popular, widespread belief that these forms of new growths are invariably to be considered malignant. It is true that if left alone they are very apt ultimately to undergo malignant degeneration, but this can occur only as a result of faulty treatment. The characteristic evidences of these cystopapillomatous growths is ascites and evidence of vegetations spread upon the omentum and general peritoneum. When, upon abdominal section, such vegetations are discovered and are shown to be the grafts of an ovarian papillocystoma, operation, far from being negated, is most urgently indicated. The author cited a patient upon whom he had operated in 1878, who lived without recurrence for twenty years. There is, pathologically, a very wide distinction between the grafting process which these tumors undergo and the well-known metastatic distribution of carcinomata and sarcomata by the lymphatics and the blood channels. Furthermore, and as furthering the plea for removal of these growths, even if apparently malignant, it is a well-established fact that malignancy, when it does subvene in these growths, usually for long periods, remains so strictly localized as to permit of its entire removal. Gross evidence of malignancy should not, therefore, contraindicate a hopeful postoperative prognosis. The patient should be safeguarded, if necessary, by repeated laparotomies, the need for these being, as a rule, determined by returning ascites.

The adnexa should be removed on both sides in women of over forty years of age even if one side alone be involved. Hysterectomy is immediately indicated if there be the least suspicion of malignancy. Drainage is unnecessary if ascites be absent, and if present, it is the author's custom to employ a glass tube with gauze for a few days only. It does no harm and often seems to act as a deterrent of malignant development.

Dr. Dudley P. Allen, of Cleveland, said that the danger of malignancy in these cases had been grossly overestimated and that every particle of available vegetation should be removed. He warmly congratulated Professor Pozzi on his brilliant paper and thanked him for bringing before the association with such force and earnestness a topic of so wide interest and importance. He cited a case which in all details supported what Professor Pozzi had said—auto-infection by medullary carcinoma having been induced from a papillomatous cyst.

Dr. J. E. Moore, of Minneapolis, said he had been favorably impressed by Professor Pozzi's paper. The question of the malignancy of papillomatous ovarian cysts had long been a subject of open discussion and he was glad to feel that it had at length been closed by so able a clinician.

Dr. Wm. B. Coley, of New York, reported a case of papillomatous cystoma which had been mistaken for a hernia. To his knowledge the patient, after resection, lived for seven years in perfect health.

Dr. A. J. Ochsner considered Professor Pozzi's conclusions to be epoch-making. Very careful distinction should be made between metastasis and the grafting of a papilloma. He considered the removal of the uterus a desideratum, because of the danger of broad ligament involvement.

Dr. L. L. McArthur, of Chicago, said that he had often found tuberculous germs in the apices of the papillomata.

Professor Pozzi, in closing, said that his remarks had been confined strictly to papillocystomata of the uterus and ovaries; they did not apply to such growths of the bladder and rectum. As to hysterectomy, he believed that every woman should be given an opportunity to bear children and that surgeons should be as conservative as possible.

He cited the case of a woman in whom he had resected all but a small portion of one ovary who had had her child and in whom a secondary operation was done shortly after delivery. As to the cause of the condition, whether tuberculous, as had been suggested by Dr. McArthur, or due to chronic irritation, such as is caused by chronic metritis, he was unable to say anything definite.

Anchylosis treated by Arthroplasty.—Dr. J. B. Murphy, of Chicago, presented the case of a young man in whom he had succeeded in reproducing a well functionating hip-joint. He exhibited photographs and radiograms of the new joint which showed the result very clearly. He said that there were two important questions to be answered, viz., "Can bony anchylosis be prevented?" "Can a normal joint be reproduced?" Three types of anchylosis have to be considered, the peri-articular, the capsular and the bony. Hygromata, as is well known, are often produced in the case of tumors and others who characteristically suffer from enlarged bursæ, the result of chronic irritation. The aim of him who would remake a joint should be to produce such irritation upon such tissues. Experimentation had shown that hygromata can best be produced by subjecting fatty tissue to constant pressure. This principle has a great future in the treatment of certain

chronic joint affections; it seems specially suited to cases of adherent patellæ, in the elbow and in the hips.

(To Be Continued.)

AMERICAN GYNECOLOGICAL SOCIETY.

Twenty-ninth Annual Meeting, held in Boston, Mass., May 24, 25 and 26, 1904.

(Continued from Page 1101.)

Second Day—May 25th.

Primary Repair of Lacerations of the Cervix Uteri.—There was a symposium on this subject. Dr. Edward P. Davis, of Philadelphia, read the first paper. Experience in 53 cases had led to the following conclusions: When the patient was not infected and when the tissues had not been subjected to sufficient violence to threaten necrosis and laceration of the cervix, one-half inch or more in extent was present, primary closure had been followed in his experience with good results. These cases usually occurred in primiparæ where resistance in the soft part occasioned sufficient delay and fatigue to require delivery by forceps. They were also seen in cases of premature labor, whether spontaneous or induced, where the cervix was not physiologically softened for perfect dilatation. They were also found in paitents having spontaneous labor with very strong expulsive efforts, and with large children. Naturally those cases in which the mechanism of labor was abnormal through posterior rotation of the occiput, face presentation or breech presentation, predisposed to laceration of the cervix. While primary closure of laceration of the cervix was indicated in the conditions just described, certain conditions were necessary for its successful performance. These conditions were outlined. Dr. Davis then described the technic of the operation, and the after-treatment. The number of cases under observation was 53. In these, good union occurred in 45; fair union in 6; no union in 7, while infection developed in none. In 84.9 per cent. the operation was successful; in 11.3 per cent. it was moderately successful, and in 3.8 per cent. the operation failed. The percentage of infection was *nil*. He pointed out the objections which were commonly urged against this operation, after which he said that in appropriate cases in his experience immediate closure of the cervix had given no inconvenience to the mother, and had been followed by excellent results. The operation was not advised for those who do not practice obstetrics with good surgical technic, and who were not competent to operate on the genital tract.

The Practice of Cervix Suture on the Fifth Day After Delivery.—Dr. Robert L. Dickinson, of Brooklyn, said that no complicated or considerable perineal injury should be repaired at the close of labor, but three to five days later. This had an important bearing on lacerations of the cervix, as this was the ideal time to restore such injuries. The huge edema, the bruising, and the uncouth distortion of the vaginal portion just after delivery rendered identification of the parts that should be brought together impossible, and attempt to accurately coapt, guesswork. Therefore, whenever possible, the cervix should be sewed on the fifth day. The frozen sections of the puerperal weeks showed that then, and not until then, shrinkage had occurred. Bleeding no longer obscured the difference between flayed surface and torn structure. Then only were the surroundings of the operation, in the way of illumination, table, time, and a rested personnel possible. This applied particularly to private practice. The conditions under which the cervix should be repaired at the close of labor were: (1) Bleeding from a firmly contracted uterus, notwithstanding ergot, heat, holding, and tampon. Here there was a spurting artery. (2) When the cervix injuries were clean cuts, of known location, as after Dührssen incisions. (3) When, in the immediate repair of a moderate perineal injury, a tear of the cervix is found. The conditions under which the cervix should be repaired several days after labor were: (*a*) Exhaustion of patient, or surroundings and conditions which precluded careful work. (*b*) Extensive injuries, except when these persistently bled or had been cut by the surgeon. (*c*) When accompanied by complicated or considerable injuries to the pelvic floor. The author drew attention further to the alterations produced by granulation and contraction in these wounds when left alone, so that the scarred, swollen, everted, or cystic cervix months or years after injury gave uncertain indications for accurate restoration to the original condition.

General Considerations of Laceration of the Cervix Uteri.—Dr. J. M. Baldy, of Philadelphia, stated that as a matter of clinical fact, let the cervix uteri be torn deeply and if the parts were preserved from infection, the greater part of the tear would heal spontaneously, and the rest of it would remain perfectly healthy, as much so as would the lobe of the ear which had been torn through by the weight and drag of our great-grandmother's earrings. The lips would remain uninfiltrated of normal size and thickness, with no eversions and no erosion of the lining mucous membrane. In such a case there would be no untoward symptoms and no bad effects whatever. There was a tendency among obstetricians to repair these lacerations primarily. The objections to such practice were manifold, and he admitted a prejudice against it. These objections were pointed out. Whatever might be ideal surgery under the exigencies of actual practice, the treatment for recent lacerations of the cervix remained, and he believed would remain, rigid local cleanliness, excepting where there was sufficient hemorrhage to demand a ligature. Where noninfection could be insured, and where the torn lips were not unnecessarily disturbed, by the careless use of the nozzle of a syringe, spontaneous healing of these lacerations might be expected to a greater or less degree, and what tear remained, when nature was through with her work, would be of a healthy character, would give no future trouble, and would need no surgical interference. The symptoms of chronic lacerations of the cervix uteri were essentially local in their production and remained so in their manifestations. He had no sympathy with the views which attributed reflex symptoms to these lesions. In uncomplicated cases, where there simply existed a laceration of the cervix uteri, with everted and eroded lips, producing a constant leucorrhea and a feeling of weight and uneasiness in the pelvis and about the rectum, these so-called reflex symptoms did not exist. There was one belief prevalent which would warrant, nay demand, a repair of every lacerated cervix—the belief that lacerations of the cervix produced carcinoma. In this belief he took no part, and no one had to his knowledge as yet produced a single scientific fact which would uphold such a theory. In twenty years' work he had not seen a single case of cancer develop in a laceration of the cervix which he had refused to repair.

Intrapelvic Hematoma.—Dr. J. Whitridge Williams, of Baltimore, reported a case of intrapelvic hematoma following labor, and made some remarks on the treatment of incomplete rupture of the uterus.

Presidential Address.—Dr. Edward Reynolds, of Boston, in his Presidential Address, said, among other things, that the Society owed its preeminence along its chosen line less to the words than to the prolonged and daily labor of the eminent men who had composed it in

the past, and must owe its future to the lifework of the equally able men who were to fill its membership in the coming years. He said the use of the printed abstract published beforehand had of late become increasingly prominent in many societies, and in the British Medical Association this use of the abstract had reached its highest terms. It was seldom wise to adopt wholesale the regulations of other organizations. It was usually better to let changes follow a more gradual and natural evolution under the needs of the individual assembly, but the methods of the English association were worth a passing consideration. A Fellow of the British Medical Association who desired to present a paper at one of its meetings, must put it in the hands of the Secretary complete and in the form in which he desired its publication a number of weeks before the meeting, and the communication might be of any length he chose. A paid Secretary, a qualified and experienced medical author, then abstracted each paper in the form and length which he considered best fitted for its public delivery. This official then read the abstracts to the Society as they were called from the program. Such a reading inaugurated each discussion, and the member whose ideas had been thus succinctly set forth before his associates took part in the discussion and closed it. The ideas of individual members by this method were better and more intelligently presented to the Society than if they had read their complete papers. In this way the time of the Society was economized, full debate was encouraged, and the members had the advantage of publishing to the world papers in which their points were set forth at the fullest length and without time limitation.

Dr. Reynolds said that such a method was perhaps too far advanced for our present needs or possibilities, yet it had many advantages, and it seemed to him worth calling attention to as one toward which the Society might well advance. Would it not be wise to give this method, or a modification of it, a year's trial? In conclusion, he expressed his thanks for the kindly personal feeling which had actuated the Fellows when they elected him President, for which, and for the many personal pleasures which he had enjoyed in the Society, he was, and would always gladly remain, their willing debtor.

SYMPOSIUM ON INJURIES TO THE PERINEUM.

The Preventive Treatment of Pelvic Floor Lacerations.—Dr. J. Clifton Edgar, of New York, read the first paper. The most important part of the management of the second stage of labor was the prevention of pelvic floor lacerations, lacerations of the fourchette in primiparæ, and superficial tears about the vulvar orifice in both primipara and multipara often occurred, were often unavoidable, and usually readily healed with simple asepsis. Deep lacerations were avoidable in normal, ordinary cases of labor. The factors which tended directly or indirectly to produce pelvic floor lacerations were numerous, but for convenience he arranged these in three major classes. These were concisely stated as: (1) Too rapid expulsion of the fetus, so that tearing instead of stretching resulted. (2) Relative disproportion in size between the presenting part and the parturient outlet. (3) A faulty mechanism of labor, whereby the larger circumference of the head and shoulders than necessary passed through the parturient outlet. From an extended clinical experience, he could speak most enthusiastically of the preliminary digital stretching of the vulvar outlet in primiparæ, and especially in elderly primiparæ, as a prophylactic measure in perineal protection.

The author then discussed episiotomy, head delivery, and cleidotomy. Regarding shoulder delivery, the author firmly believed from years of careful clinical observation that the posterior shoulder was responsible for many instances of deep pelvic floor laceration. Furthermore, that moderate ruptures caused by the passage of the head were often increased and rendered serious by the subsequent passage of the posterior shoulder. He had been most successful with the following method of shoulder delivery, and either the lateral or dorsal posture of the patient could be used at will. This method was not new: (1) The delivery of the shoulders was delayed, if possible, until nearly complete rotation of the bisacromial diameter had taken place. (2) The fetal head was taken in the hand and gently raised or pushed, so as to bring the anterior shoulder well up behind the symphysis, thus giving the cervico-acromial diameter of the fetus at the outlet instead of the bisacromial. (3) The posterior shoulder was now allowed to pass out spontaneously and whenever possible manual extraction should be avoided, as this increased the risk of perineal rupture. (4) During the detention of the anterior shoulder behind the symphysis, the fetal hand of the opposite arm lying across the fetal chest would usually soon appear in the vulva. He had found that delivery might be safely assisted by slowly flexing this forearm and arm out through the vulva and thus delivering the posterior shoulder by slight traction on the posterior arm. (5) Should the foregoing be impracticable and delay in the expulsion of the posterior shoulder occur, he had found gentle traction upon the head, the fingers encircling the neck, to be preferable to traction with a finger in the axilla. (6) Should there be delay in the delivery of the anterior shoulder, after expulsion of the posterior, it was best remedied by making traction directly downward, with the hands placed on the sides of the head, taking care not to make too great pressure on the perineum.

Immediate Repair of Lacerations of the Perineum, with Special Reference to Placing the Sutures Before the Lacerations Occur.—Dr. Lapthorne Smith, of Montreal, spoke of the importance of closing up even small tears of the perineum, so as not to leave raw surfaces for septic absorption. It was important to close large tears so as to retain the function of the pelvic muscles. The best time to put in these stitches was just before the head pressed on the perineum, while the patient was anesthetized, and before the parts had lost their relative positions. With the left finger in the vagina and the thumb in the rectum, a large perineum needle on a handle was passed just under the vagina, threaded with silkworm gut; the two or three stitches hung loosely in a Pean forceps until the placenta had been delivered, when they were quickly tied, bringing the parts exactly together as they were before the tear.

Immediate Repair of Injuries of the Pelvic Floor.—Dr. Henry C. Coe, of New York, said that he had selected this topic in order to emphasize the fact that by careful attention to puerperal lesions at the time of their occurrence the patient could be spared much future trouble. He assumed that it was the usual practice of modern accoucheurs to repair injuries to the pelvic floor at once, but it was one thing to suture visible tears and another to repair deeper lesions. Even when perfect union of the lacerations was obtained, the occurrence of prolapsus, cystocele and rectocele months afterward proved that there had been some fault in the technic. The fact of the separation of the fascia and levatores ani muscles must be recognized as well as the superficial tear, especially after difficult instrumental deliveries. An illustrative case from the writer's practice was cited. The tendency of the accoucheur after a tedious instrumental case, in which both physician and patient were exhausted, was to spend as little time as possible in repairing lesions of the soft parts, trusting to aseptic technic to insure perfect healing. The writer was firmly of

the opinion that it paid to do the work thoroughly at the time, unless the patient's condition was such as to render delay advisable. He had had such good results from immediate operations that the intermediate did not appeal to him. In conclusion, he alluded to the fact that the modern accoucheur must be a surgeon as well as an obstetrician. It was expected of him to leave the patient in as good condition as he found her, otherwise he properly laid himself open to criticism.

Uniformity in Pelvic and Cranial Measurements.—Dr. A. F. A. King, of Washington, D. C., read a paper on this subject, in which he reached the following conclusions: (1) That at present the measurements of the normal pelvis and fetal head are indefinite and unsettled, and must continue so to be so long as they are determined by our present methods of mensuration. (2) The chief purpose in obtaining the normal dimensions of these structures being for teaching and learning the normal mechanism of labor, it is proposed to adopt an ideal or hypothetical head and pelvis, upon the dimensions of which all authorities may agree. (3) In the adoption of such ideal structures, it is unnecessary and undesirable to define any measurement with exact precision—no fraction smaller than one-fourth of an inch, or half a centimeter (in the metric system) being required. (4) Race variation forms no real obstacle to the proposed plan, and other apparent difficulties can be overcome. Finally, should the proposition meet with approval, it is suggested that this Society take the initiative in bringing the matter in proper form before some forthcoming international medical congress for general adoption. Accordingly, a committee was appointed by the President to consider the matter of uniformity in pelvic and cranial measurements, and report at the next annual meeting.

SYMPOSIUM ON NON-OPERATIVE LOCAL TREATMENT IN GYNECOLOGY.

Dr. Willis E. Ford, of Utica, N. Y., in reading the first paper on this subject, said that no one would deny that greater good had come from surgical treatment of diseases peculiar to women than was ever dreamed of by the early gynecologists who did not operate. No comparison of results could be made. He did not think it was true, however, that the specialty ought to become purely surgical. Pathology learned by pelvic and abdominal surgery ought to be clearer and better than was ever discovered post mortem. It was fair to assume that men who did this work had a better idea of the natural history, progress, and dangers of these diseases than those who did not operate; and that, therefore, the early treatment ought to be in the hands of men who were also doing surgical work. The nervous habit could not be cured by surgical procedure. What was commonly called neurasthenia was not a disease, but an established habit, possible only to those who had from birth an unstable or weak nervous constitution. Before the mental symptoms began was the time to prevent neurasthenics from becoming permanent invalids. That the nervous habit could not be cured by surgery had been proven by the fact that the removal of diseased ovaries, and such like operations on epileptic women, had not cured the epilepsy or neurasthenia. The argument, therefore, was that in those ailments that tended to disturb the emotions, especially those of the reproductive organs of men or women, the serious thing was not the pain experienced, but the permanent invalidism which was brought about by the protracted local sensations that in time disturbed the mental equilibrium and brought about the invalid habit. These local irritations ought to be treated by skilled gynecologists, and not allowed to develop either the mental or physical ailments which were so common a result. These arguments were enough to make the profession to revive its interest in non-operative procedures. Recent displacements, especially in young people, and acute infections were mentioned as demanding non-surgical care early, if one wished to avoid the more serious ailments, and especially the most serious of all, the mental disorder called neurasthenia.

The Value of Non-operative Local Treatment in Pelvic Disorders.—Dr. Walter P. Manton, of Detroit, Mich., said that the ignorance of proper methods, together with the fascinations of operative measures, had brought the local treatment of pelvic disease into disrepute. Three of the factors, which among others at the present time were largely responsible for the neglect of medical gynecology, were: (1) The average physician's lack of knowledge in the accurate diagnosis and local treatment of pelvic disease. (2) The allurements and fascinations of surgery, and (3) competition in the field of practice. While it was true that no amount of instruction could impart a *tactus eruditus*, still anyone could acquire a knowledge of the primary principles underlying the correct interpretation of gynecic ailments, if opportunity was offered for the practical examination of patients under competent direction. In ignoring the benefits to be derived from medicine, he was convinced that surgery had gone too far and that it had overshot the mark, but that the present tendency to operative measures in all conditions affecting the pelvic organs could not be ascribed so much to the good which surgery, rightly directed, was capable of accomplishing as to other elements which had entered into the case was also evident. In the best of hands the results from local treatment in pelvic diseases were frequently slow in manifesting themselves, and discouragements were often met with, but in suitable cases persistent effort would ultimately attain the desired end. The objects of local treatment were the relief of pain and irritation, often of a reflex nature; the allaying of congestion and inflammation; the absorption of the products of inflammation, and the reposition of displaced organs. In the regulation of the uterine functions, in congestions and mild inflammations of that organ and surrounding parts, and in displacements of the uterus, with and without adhesions, the application of proper local treatment was of signal value; while in prolapse of the tubes and ovaries, even in the presence of extensive adhesions, but without ascertainable morbid changes in the organs themselves, vaginal tamponade offered the simplest and most efficient means of reposition and cure.

Treatment Preparatory to Operation.—Dr. Henry C. Coe, of New York, introduced his remarks with the statement that while his early training had led him to believe that such treatment was practically indispensable in cases of so-called "cellulitis," subsequent experience had convinced him that his notion was not in accordance with pathology or common sense. He had expressed skepticism in this subject as long ago as 1886, when he read a paper on the "Exaggerated Importance of Minor Pelvic Inflammation," and subsequent experience had only served to confirm his opinion that old pelvic exudates and adhesions were not *per se* a contraindication to operations on the uterus. Modern aseptic technic was a sufficient safeguard against danger from this source. The reader contrasted the old practice of keeping a patient in a hospital for several months, with the preparatory treatment between each minor operation, with the present plan of performing combined operation at one séance, and sending out in three or four weeks. He questioned the actual value of the hot vaginal douche, local applications to the vaginal fornix, treatment of the ectopic cervix, etc., previous to trachelorrhaphy, since the diseased tissue would all be removed at once by amputation. At the same time, he admitted the

remarkable results often observed as regards the absorption of extensive pelvic exudates. Acute and subacute inflammations in and around the adnexa formed the real contraindication to operation, and doubtless surgeons were not always as careful as those of the former more conservative generation in selecting their cases. Competition and the rush of modern life were responsible for some ill-advised operations, minor, as well as major. In regard to major operations, the author thought that (excluding pus cases) general preparatory treatment of the patient was rather more important than local. He believed, however, that the admirable results obtained by the pioneers in the treatment of vesicovaginal fistulæ were due to careful preparatory treatment, such as the divisions of cicatrices, stretching of the vagina, etc. Fortunately we were seldom called upon to handle such complicated cases as those described by Sims, Emmet, and Bozeman. With all our improvements in technic, we had not yet outgrown all the wisdom of our old teachers.

The Value of Post-operative Local Treatment.—Dr. J. Riddle Goffe, of New York, said the experience of all observers was that local treatment relieved congestion, pain and discomfort, inaugurated, hastened and accomplished the absorption of edema, plastic exudate, adhesions, and pseudohypertrophy. If it would relieve these conditions, how much more certainly would it prevent them? It had been found serviceable in preventing the deposit of plastic exudate and the reformation of adhesions in cases in which these were present at the time of operation. It was especially valuable in cases subjected to vaginal section for the relief of sterility. The author reported several instructive cases to substantiate the points made in his paper.

The Implantation of the Human Ovum in the Uterus.—Dr. Chas. Sedgwick Minot, of Boston, discussed this subject by request. He stated that the human ovum produced upon its exterior during its earliest stages of development a thick layer of cells, the trophoblast. The function of the trophoblast was to corrode away a portion of the mucous membrane of the uterus, making a cavity in which the ovum lodged itself. The trophoblast thereupon underwent a hypertrophic degeneration, such as to produce a series of irregular spaces, which persisted and became the intervillous spaces of the placenta. Papillary outgrowths of the chorionic mesoderm meanwhile penetrated the trophoblast, initiating the formation of the chorionic villi. The trophoblastic cells over each mesodermic outgrowth persisted in two layers, the inner cellular, and the outer syncytial. These two layers represented the first stage of the villus ectoderm. Similar observations had been made upon primates, and were compared with those upon the human subject. He compared briefly the method of implantation in man with that in other animals, to show that the trophoblast was of general occurrence, and that by destroying uterine tissues it inaugurated the formation of the true chorionic placenta.

Bathing During Menstrual Period.—Dr. J Clifton Edgar, of New York, said that in the consideration of this subject several questions suggested themselves, namely (1) the advisability of bathing of any description during the menstrual period, and if at all, to what extent; (2) the use of the bath in dysmenorrhea; (3) the use of Nauheim or other chemical baths or hydriatic procedures; (4) the risk of infection of the endometrium in intramenstrual tub-bathing; (5) the influence of modern athletics on women, lessening the risk, if any, of intramenstrual bathing. These questions were submitted to the members of the Society, from whom he had received 122 acknowledgments. From the replies received, and the literature on the subject, he drew the following conclusions: (1) All forms of bathing during the menstrual period are largely a matter of habit, and usually can be acquired by cautious and gentle progression, but not for every woman does this hold good, and surf bathing, where the body surface remains chilled for some time, should always be excepted. (2) A daily tepid sponge bath (85° to 92° F.) during the menstrual period is not only a harmless proceeding, but is demanded by the rules of hygiene. (3) In the majority of, if not all, women, tepid (85° to 92° F.) sponge bathing after the establishment of the menstrual flow, namely, second or third day, is a perfectly safe practice. (4) Furthermore, in most women the habit of using the tepid shower or tub bath after the first day or two of the flow can with safety be acquired."

The Streptococcus in Gynecological Surgery.—Dr. Hunter Robb, of Cleveland, Ohio, stated that in order to arrive at some definite conclusions with reference to the *Streptococcus pyogenes* as a cause of death in his work, he had made an analysis of all his cases in which this organism had been found during the past six years. It was shown from observations that quite a large number of his patients died, and several were unimproved. It was also noticed that in the great majority of cases in which this organism was met with, there was a previous history of infection following labor, or an induced criminal abortion. In the past six years he had had 137 cases of abortion (including a few cases of labor) in which it was necessary to carry out some form of treatment. Of this number, 104, or 75.9 per cent., recovered; 17 or 12.4 per cent. were improved; 1 or .8 per cent. was unimproved, and 15 or 10.9 per cent. died. In 16 of the 137 cases the streptococcus was found. The total number of all his cases in which the streptococcus was found was 40, consequently those in which this organism was found following an abortion or labor formed 40 per cent. of the total number of streptococcus cases from every source. Of these 16 patients (streptococcus cases) following abortion or labor, 4 or 25 per cent. recovered; 3 or 18.75 per cent. were improved; 9 or 56.25 per cent. died. In the whole 40 cases from every source, in which the streptococcus was found, the results were as follows: Recovered, 20 or 50 per cent.; improved, 6 or 15 per cent.; deaths, 14 or 35 per cent. The streptococcus was found in the following combinations given in order of frequency: (1) *Streptococcus* alone; (2) *Streptococcus* and *Staphylococcus pyogenes aureus;* (3) *Streptococcus, staphylococcus aureus,* and *Bacillus coli communis.* In all these cases, except three, in which they were obtained from the vagina, the organisms were obtained from the uterus, the adnexa, the cul-de-sac, or from several of these situations. In other words, they were proved to be present in places which were admittedly not their normal habitat. In the past five years he had had 724 abdominal sections, with a total number of 32 deaths, or 4.43 per cent. In 7, or 21.9 per cent. of them, the *Streptococcus pyogenes* was demonstrated. In all there were 19 cases of abdominal operations in which the *streptococcus* was found. Of this number, 12 recovered, or 63.2 per cent., and 7 died, a mortality of 36.8 per cent.

The Nature of the Indications for Operation for Fibroid Tumors of the Uterus.—Dr. Chas. P. Noble, of Philadelphia, presented a table of the degenerations and complications in a series of 1,188 cases of fibroid tumors operated upon by Martin, Noble, Cullingworth, Frederick, Scharlieb, and in series reported by Hunter and MacDonald. Especial attention was called to the relative frequency of adenocarcinoma of the uterus as compared with epithelioma of the cervix. The deduction drawn from this fact was that fibroid tumors were a direct predisposing cause of cancer of the cervix. A

careful consideration of the facts presented in the table, said the author, should convince anyone with an open mind that the classical teachings concerning fibroid tumors were erroneous. This teaching was that fibroid tumors of the uterus were benign growths, which usually produced but few symptoms, and which after the menopause underwent retrogressive changes, becoming smaller or disappearing; that the chief danger of fibroid tumors consisted in the fact that at times they caused hemorrhage from the uterus, and that rarely they caused trouble because of their size or because of pressure on adjacent viscera. An analysis of the 1,188 cases showed that because of the degenerations in the tumors, about 16 per cent. of the women would have died without operation; about 18 per cent. would have died from the complications present. In addition, it was well known that a certain percentage would have died from intercurrent diseases brought about by the chronic anemia present in many of these cases, and by injurious pressure from the tumors upon the alimentary canal and urinary organs. In brief, at least one-third of the women having fibroid tumors, as shown by the author's table, would have died had they not been submitted to radial operative procedures.

The Treatment of Gonorrhea.—Dr. Henry T. Byford, of Chicago, said there was dissatisfaction with prevalent methods of treating this disease. The desideratum was a local remedy that would rapidly destroy or remove the germs without injuring the protective epithelium, and a method of application that could be used by the patient which would not carry the germs to a deeper portion of the genito-urinary tract. He advocated prolonged irrigations with hot water as a basis, and spoke of frequent injections of hot water as a substitute for prolonged irrigations. He detailed his experience with urethritis in the male, and referred to hydrogen dioxide and unirritating germicidal solutions as substitutes for plain water injections, and gave their application to gonorrhea in the female. The advantages of this treatment, when used early, were summarized by him as follows: (1) It prevents the spread of the disease to adjacent parts; (2) it does not injure the epithelial covering, and it tends to limit the infection to the superficial areas; (3) it removes more germs and pus cells than either astringents or disinfectants can destroy; (4) it acts in the same way as constant irrigation, both in aborting and arresting the progress of the infection; (5) it can be used more frequently than astringents or strong germicides, so that the parts can practically be kept free from pus and germs all of the time, while the method of using germicides or astringents three or four time daily allows the germs and pus to accumulate and spread between injections. (6) In the male, and possibly in the female, peroxide injections may be substituted when the time and the facilities for the hot water treatment cannot be had. When the discharge has become scanty and the injections cannot readily be used so frequently, a non-irritating solution of a silver salt can follow each hot water or peroxide treatment. (7) It may be used in connection with alkaline injections for the dissolving of germs and culture material not eliminated by the douches. (8) It does no harm. It can be combined with the internal or local medication when it becomes impossible to carry it out with the necessary time-consuming detail. It exemplifies the superiority of asepsis to antisepsis.

Dr. Philander A. Harris, of Paterson, N. J., exhibited and described a new uterine obstetrical dilator and illustrated its practical features.

Niagara Falls, N. Y., was selected as the place for holding the next annual meeting, in May, 1905.

THE AMERICAN MEDICAL ASSOCIATION.

Fifty-fifth Annual Meeting, held at Atlantic City, N. J., June 7 to 10, 1904.

SECTION ON NERVOUS AND MENTAL DISEASES.

Second Day—June 8th—(*Continued*).

(Continued from Page 1232.)

Treatment of Aphasia by Training with Some Remarks on the Re-education of the Adult Brain.—Dr. Charles K. Mills, of Philadelphia, said that the cerebral zone of speech, the areas and centers for concrete memories and abstract concepts, their relation to cerebral education, the various psychic centres and their subdivision were referred to in detail, after which the author considered the varieties of aphasia and the various methods of training the patient, including the repetition of words, letters and phrases, Wyllie's psychologic alphabet, grammatical training and the relation of writing to speech, followed by a résumé of his personal views in regard to a motor graphic center. This was followed by an exhibition of two cases, the first of which was a total motor aphasic, and in addition thereto had Jacksonian epilepsy, so that he could only say his own name, the diagnosis being lesion involving the third frontal convolution and adjoining region, which under a careful system of training had greatly improved. The other case was that of a man about forty years of age, who about seven months ago had an epileptiform attack followed by aphasic symptoms, from which he partially recovered, and later had an intensification of the attack at which time he was almost completely word, letter and number blind; this case has also shown considerable improvement under treatment. He stated that in his opinion the sensory aphasics improved most rapidly.

Dr. T. H. Weisenburg read a résumé of the literature on this subject.

Dr. Charles W. Burr, of Philadelphia, believed that the method to be pursued should be the same as is used in the education of children, such as showing them an object, calling the object by a certain name, writing down the name, and letting them draw a picture of it. He did not approve of the system of having them repeat monosyllables. As so many of the cases are due to specific disease, he felt unless syphilis could be excluded, it would be difficult to say just how much of the improvement was due to training and how much to the absorption of the exudates due to the toxins of the specific disease.

Dr. W. G. Spiller, of Philadelphia, considered that there are four elements bearing particularly upon the prognosis: (1) Age; (2) nature of the lesion; (3) extent of the lesion, and (4) intelligence of the patient. Traumatic lesions, he believed, were more hopeful than those produced by hemorrhage into the brain, reporting two cases, due to trauma, one resulting in word deafness, in which by operation a large cyst was removed from the temporal lobe on the left side, and the man by his own efforts recovered a great deal from his previous hopeless condition.

Dr. Punton, of Kansas City, Mo., referred to the scarcity of literature on this subject, and also raised the question as to whether the efforts put forth by the patient would have a tendency to bring on a second attack, in those cases due to embolism and thrombosis.

Dr. F. W. Langdon, of Cincinnati, Ohio, felt that possibly the entire improvement could not be attributed to any one factor, either education, medication or the action of nature. He then referred to the fact that the third frontal convolution was not a motor speech centre, but rather a language construction centre, and that the real motor centre is the lower Rolandic region. He did not, however, believe that grammar had anything

to do with the acquirement or reacquirement of language by a patient suffering from motor aphasia.

Dr. W. J. Herdman, of Ann Arbor, Mich., felt that the degree of recovery depended upon the capacity remaining after the organic disease, traumatism, etc. He believed that if there was any capacity remaining it was for the nouns and verbs or main parts of a sentence and that the adjectives, adverbs, prepositions, etc., must be added by education.

Dr. Charles K. Mills, in closing, stated that the education of an aphasic could not be exactly the same as was indicated for a child, for the reason that he had an advantage over the child, in that his brain was once thoroughly organized, and a disadvantage in the fact that the child in its education started out with a potential mechanism of speech in the cerebrum, unattacked by disease. He also reviewed the various form of lesions causing the condition and the prognosis in the different cases.

Tuberculosis of the Nervous System.—Dr. D. J. McCarthy, of Philadelphia, gave a résumé of the work done at the Phipps Institute, and the results of a study of 78 autopsies and 126 cases clinically considered. He considered, first, the organic lesions and their various subdivisions, and second, functional disorders, due to either toxins generated by the tuberculous process or to mixed infection, the clinical and pathological findings being set forth in detail.

Dr. David I. Wolfstein referred to tuberculosis as a cause for meningeal encephalitis, and believed that not only did tuberculosis produce the nodular lesions, but also a more diffused form of softening, believing that the mental disturbance depended largely upon the extensiveness of this diffusion.

Dr. Spiller referred to a case which had been diagnosed as brain tumor, and for which an operation was done, but which proved tuberculosis of the nervous system.

Dr. D. J. McCarthy, in closing, remarked the frequency with which tuberculosis extends into the meninges and produces hemorrhagic encephalitis.

Facial Paralysis, Possibly Due to La Grippe.—Dr. F. W. Langdon, of Cincinnati, reported the history of a patient, a male teacher, fifty-one years of age, married and in good health. The attack occurred after a journey of fifty miles, prior to which he had been suffering from occipital headache for five weeks. No cardiac disease or syphilis was present. The symptoms began with logophthalmos, and three days later there was inability to close the left eye, which afterwards extended to both eyes, and during the course of the attack there were slight dysphasia, marked dysesthesia, blurred speech, and defects in the taste. The knee-jerks were absent and the plantar reflexes were flexor in type and active. There was bilateral facial paralysis and the response of the muscles to faradism and galvanism was sluggish.

Dr. T. H. Weisenburg reported three cases of bilateral facial paralysis, one of which gave a history of disease in the male members of the family for two prior generations.

Dr. Hugh T. Patrick, of Chicago, reported a case of double facial paralysis occurring in a child in which the electric reactions were not the ordinary reactions of degeneration, the eye muscles are not involved, nor are the muscles of the extremities to any great extent, but there are general lassitude, weakness and general fatigue, in addition to the facial paralysis, which case he was rather inclined to diagnose as myesthenia gravis.

Dr. Coulter, of Omaha, Neb., reported a case of unilateral facial palsy occurring in a physician following la grippe. The physician realizing that he was contracting the la grippe had driven all day in doing his work, resulting in this condition, the knee jerks were absent; there was a great deal of sweating, and both plantar reflexes were flexor in type.

Dr. Albert E. Sterne, of Indianapolis, Ind., referred to the case of a man who was thrown from a wagon striking on the back of the head a little to the right side, causing deafness in the left ear, paralysis of the left half of the face and loss of sensation in the right half of the body, in which case twenty years after under careful systematic treatment, the use of the facial muscles was recovered to a considerable degree, and the hearing and sensations on the right half of the body were restored to normal. Another case reported was that of a man who was stricken suddenly with symptoms exactly similar to poliomyelitis; later wasting of the muscles, which were paralyzed, and degeneration, which still exists to a large extent in the man's trunk and both halves of the face.

Clinicopathologic Study of Hemiplegia with a Microscopical Examination in Eleven Cases.—Dr. T. H. Weisenburg, of Philadelphia, gave a clinical report of the study of 150 cases of hemiplegia with especial attention to heredity, prehemiplegic and post hemiplegic pain, atrophy of the muscles of the paralyzed side, and the respiratory movements and trophic disturbances on the paralyzed side. In the pathological report particular attention was directed to the primary seat of the lesion, the degree of degeneration in the cerebral peduncle, the relative amount of degeneration in the direct and crossed pyramidal tracts with reference to the findings of Marie, Guillain and others, the state of the nerve cells of the anterior horns, and the conditions of the nerves and muscles on the paralyzed side.

Dr. Guy Hinsdale, of Hot Springs, Va., stated that he had frequently observed yawning accompanied by movement of the paralyzed arm or leg in a number of cases of hemiplegia, which, while he supposed was to be explained on the ground that it was a reflex condition did not have the characteristic quick movement of the knee jerk and other reflexes.

Dr. Hugh T. Patrick, of Chicago, Ill., cited the Jacksonian theory in explanation of the increase in respiration on the paralyzed side, which is that increased action of the muscles of the extremities on one side increases the action of the trunk muscles on the other side, which would therefore cause the weakness of the trunk muscles on the opposite from the paralysis.

Dr. Theodore Diller, of Pittsburg, Pa., believed that the sensory phenomena were present in many diseases which were attributed to pure motor disturbances, citing as instances thereof paralysis agitans and Landry's paralysis.

Dr. David I. Wolfstein, of Cincinnati, Ohio, reported two cases which had come under his observation in which the Babinski sign was present within one hour after the onset of the attack, and remarked upon the diagnostic value thereof when present early.

Dr. Coulter, of Omaha, Neb., reported a case of fracture of the skull, followed by coma and hemorrhage from both ears, in which the Babinski reflex was present within three hours after the accident.

Dr. Frank P. Norbury, Jacksonville, Ill., spoke of the hereditary character of the disease, and repoted an instance in which a physician, his father and grandfather had all died thereof.

Dr. Albert E. Sterne, Indianapolis, Ind., referred to the rise of temperature which is frequently present in the early cases.

Dr. A. C. Brush, Brooklyn, also discussed this paper, and Dr. Brainard reported the pathological results of autopsies on two cases of hemiplegia, the one occurring in a young woman during the menstrual period,

in which there was no cardiac lesion present, and in which he suggested the source of the clot might have been from the endometrium; the other occurring in a woman of about sixty years. In regard to the hereditary tendency, he reported the case of a man dying from this condition, whose male ancestry for three preceding generations had died from the same cause.

Dr. T. H. Weisenburg, in closing, stated that most of the cases were due to hemorrhage; that the paralysis was most marked in the distal ends of the extremities, and that in only 30 out of 109 cases was there any sensory disturbance. The Babinski reflex was observed in most cases within twenty-four hours; it was absent in three cases, and in two cases was present within twelve hours.

Two Cases of Congenital Deformity, Possibly Due to Intrauterine Disease of the Spinal Cord.—Dr. Charles W. Burr, of Philadelphia, reported these cases. The first patient was a man, fifty-five years of age, four feet tall. The head is practically normal; the skin is normal; no anesthesia; sensation preserved all over the body, the reflexes are present, and there was no clinical disturbance discovered; the legs and arms are deformed, and he is unable to walk on account of weakness of the muscles; the epiphyses of the bones are distinctly abnormal, and the skiagraph shows marked absence of lime salts in the bones of the hands. The other case was that of a male, aged twenty-three years, on which the shoulders, arms and forearms are deteriorated or never developed; the biceps-jerk is absent; there is no disease of the bones; there is very slight wasting in the left leg, which can only be detected by measurement. Several theories had been advanced as to the cause of the condition, among others, bilateral brachial palsy from birth, mal position in utero; but the author was rather inclined to believe that possibly the man had in utero disease of the anterior horns of the spinal cord.

Dr. F. X. Dercum, of Philadelphia, stated that he was quite familiar with the first case, and believed it to be due to disease of the bone, possibly associated with muscle and tendon disease. The other case he thought to be one of intrauterine poliomyelitis and could see no reason why the spinal cord should not yield to the toxic influences in utero, as well as in life.

Dr. B. Onuf, of Sonyea, N. Y., referred to a case in which there was a question as to whether the condition was due to congenital poliomyelitis acquired in utero or central neuritis, which he had studied clinically and pathologically, and after making five sections was in considerable doubt.

Dr. C. C. Hersman, of Pittsburg, Pa., stated that he believed any maternal impression would have to occur very early in life of the fetus. He reported the case in which the esophagus was entirely severed, which the mother atributed to the fact that she had seen a hog's throat cut while pregnant. He reported several other cases of abnormal fetal developments.

Case of Spastic Diplegia Occurring During an Attack of Pertussis with Autopsy.—Dr. J. H. W. Rhein, of Philadelphia, reported the history of a patient twenty months old, born after a normal labor and delivered without instruments, and had had no previous history of nervous disease; there were no cardiac symptoms, the lungs were normal and the eye-ground negative. The child's power of walking disappeared, and later there developed spasticity of the arms and legs, nystagmus, petit mal attacks and finally general convulsions just before death. Macroscopically the autopsy was negative, but microscopical examination revealed distention of the perivascular spaces, the vessels were surrounded with round cells, multiple small hemorrhages were found in the cortex, pons and cerebellum, and in the cord there was degeneration of the crossed and direct pyramidal tracts.

Dr. T. H. Weisenburg referred to the case of a canary bird which had been in the house with children suffering from whooping-cough, developing a cough and finally dying from diarrhea, after glycerin had been placed in its drinking water. Examination of the brain of this bird showed the blood vessels to be very prominent.

Dr. Moore referred to the question which arises as to whether the nervous affection is due to toxins or mechanical irritation in case of severe nervous disease following any of the acute infectious diseases, and reported a case in which a child became totally blind following an attack of whooping-cough. Ophthalmoscopic examination was negative, and the child afterward made a complete recovery. He attributed the condition to minute hemorrhages in the brain.

Dr. J. H. W. Rhein, in closing, remarked that the literature did not contain any reference to whether the disease could be developed in the lower animals, which he thought would form a very interesting study.

Encouraging Case of Locomotor Ataxia.—Dr. Guy Hinsdale, Hot Springs, Va., reported the history of a patient who is engaged in a large canning factory and has twice been under his care, being able to resume his occupation about three months after the beginning of treatment in the first attack. He has been married eighteen years, has no children, uses alcohol and tobacco, but denies syphilis. The second attack developed about three years later, with severe gastric crises and abdominal pains. Under treatment by rest, hypodermic injections of mercuric chloride, strychnine and gradual feeding, in connection with massage, electricity and educational massage, he gained 46 pounds in nine weeks and showed great general improvement.

Treatment of Acute Anterior Poliomyelitis by Nerve Anastomosis.—This paper was by Drs. W. G. Spiller and Charles Frazier, of Philadelphia. It was read by Dr. Spiller, in which he stated that in poliomyelitis the motor nerve cells of the anterior horns in a limited area are destroyed, and the nerve fibers having their origin in these cells degenerate, and following the destruction of the nerve fibers, the muscles formerly innervated by these nerve fibers atrophy. He believed, if the persisting paralysis is slight, there is hope of recovery of function by anastomosis of the peripheral end of a diseased nerve with a normal nerve, but the success of the operation will depend on the degree and extent of the persisting paralysis, the time at which the operation is done and surgical technic.

Dr. Wharton Sinkler, of Philadelphia, believed this to be one of the most important advances in the treatment of poliomyelitis, and felt that the time would come when it would frequently be done. He also referred to the fact that a similar operation had been done in the treatment of facial paralysis.

Dr. Albert E. Sterne, of Indianapolis, Ind., felt that the method had many advantages over tendon transplantation, as in this way one establishes normal function in a set of muscles already in existence, whereas in tendon transplantation you disable to a certain extent a group of muscles. He also urged the early institution of treatment by means of electricity, massage, etc., in cases of poliomyelitis.

Dr. David I. Wolfstein believed that early interference in cases of anterior poliomyelitis was illogical, until it could be determined to what extent the cord was diseased and to what extent the muscles were going to atrophy. He also believed tendon transplantation to be superior to the method of nerve anastomosis outlined by the author.

Dr. Howell T. Pershing, of Denver, Col., felt that while we should be on the lookout for every improvement in the treatment of this disease, the results of such an operation would have to be proven by more than one or two cases before we could come to such a decision. He believed that the use of electricity and massage or any other mode of nerve irritation was contraindicated in the early stages of the disease.

This paper was also discussed by Dr. T. H. Weisenburg, of Philadelphia, and Dr. C. C. Hersman, of Pittsburg, Pa., and Dr. Spiller, in closing, stated that he believed that in many of the cases the paralysis is limited to a small number of the muscles, and felt that the operation should be performed only in selected cases. He stated that the longer the operation was delayed the less likely it is to be successful and for that reason he had named the period of six months.

Some Unusual Forms of Multiple Neuritis.—This was read by Dr. Wharton Sinkler, of Philadelphia, in which he stated that the condition has only comparatively recently been recognized, the most common type being due to alcoholism. He stated that there are many forms of peripheral paralysis, which are due to multiple neuritis, and not recognized as such, among which are arsenic, used medicinally, lead medicinally, or as a cosmetic or absorbed in the occupation, septic multiple neuritis occurring after miscarriage, abortion or labor, and reported several cases illustrating each of these conditions.

Dr. J. H. W. Rhein, of Philadelphia, reported a case of neuritis occurring two weeks after childbirth in which the patient had had very little fever and no evidence of puerperal spasm.

Dr. Angell, of Rochester, N. Y., reported a case of neuritis from lead poisoning from chewing the lead seals from cars by an employee of a tobacco factory, who had done this for a period of two or three years, chewing two or three each day. He also referred to the case of a farmer in whom the disease had resulted from kneeling on the ground husking corn.

Dr. T. H. Weisenburg, of Philadelphia, referred to the cases of beriberi, which he had an opportunity of studying while an army surgeon in the Philippines. He stated that the disease seems to come from the place where the prisoners were confined, and that when they were removed to the other side of the prison there would be no more cases develop. He mentioned two forms, a dropsical form and a dry form, the latter giving the most grave prognosis.

THIRD DAY—JUNE 9TH.

Dynamometer for Measuring Perspiration.—Dr. H. E. Wetherill, of Philadelphia, said that the value of some method for the measuring the perspiration in such diseases as exophthalmos, diabetes insipidus, uremia, fevers, etc., was evident. He then exhibited a completed instrument and several charts showing the results by the different methods.

Minor or Borderline Psychoses.—This paper was read by Dr. Frank P. Norbury, of Jacksonville, Ill. The author reported several cases, considering in detail the various symptoms, and outlined the treatment for the condition, prominent factors in which were rest, isolation, careful symptomatic treatment during the period of evolution of the nervous, and watchfulness of the physician during convalescence. He believed the disease might occur either in continuous drinkers or periodic delinquents, and was rare in acute alcoholism, occurring most frequently after adolescence up to forty or fifty years of age. Early treatment is successful in most cases, although the prognosis depends to large degree upon the inherited frailties and moral developments.

Psychic Force.—Dr. Brooks Beebe, of Cincinnati, Ohio, gave full consideration to the nature, force and mode of expenditure of this element, commenting particularly upon the influence of one mind upon another; after which he dwelt upon the value of suggestive therapeutics and urged the necessity for greater knowledge of and more frequent use of this agent by the physician.

This paper was discussed by Drs. Arthur Conklin Brush, of Brooklyn; Howell T. Pershing, of Denver, Col.; W. J. Herdman, of Ann Arbor, Mich.; James H. McBride, of Pasadena, Cal.; Albert E. Sterne, of Indianapolis, Ind.; F. W. Langdon, of Cincinnati, Ohio; Richard Dewey, of Wauwatosa, Wis.; E. B. Angell, of Rochester, N. Y.; A. A. Searcy, Alabama; David I. Wolfstein, of Cincinnati, Ohio; Theodore Diller, of Pittsburg, Pa., and closed by Dr. Beebe.

Have Drug Habits a Pathologic Basis?—Dr. Albert E. Sterne, of Indianapolis, Ind., said that the hereditary and acquired influences in the development of the habit should be carefully considered, and attention directed to the fact that the physician, on account of his knowledge of the drugs, was frequently the easiest victim. He then considered the pathology under the heads of (1) Hereditary or psychocellular; (2) Acquired or pseudopathological; (3) Effect upon the system or true pathology. The pathological changes in alcoholism and the drug habits were compared and the fact noted that the habitual alcoholic shows more effect than the periodic user.

Dr. Pressey, of Toledo, Ohio, did not look upon heredity *per se* as an important factor in the development of alcoholism and the drug habits, but considered that they were more due to the situation, vitality and nerve force of the patient.

Dr. Sterne, in closing, considered the possibility of the chemical union of the nerve cells with the alcohol and dwelt at some length on the pathology of the condition.

Upon motion of Dr. Smith Ely Jelliffe, of New York, the Chair was instructed to appoint a committee to investigate the pathology of the opium habit. This committee was announced later to consist of the following: Drs. Smith Ely Jelliffe, Brooks Beebe and Albert E. Sterne, and one other.

Case of Locomotor Ataxia with Tremor Resembling Paralysis Agitans.—Dr. John H. W. Rhein, of Philadelphia, reported at length the clinical and pathological findings in a case of the disease, occurring in a man aged fifty-eight years. He stated that in addition to the usual symptoms of locomotor ataxia, there was present a tremor resembling paralysis agitans, but none of the other charateristic symptoms of Parkinson's disease. The characteristic lesions of locomotor ataxia, together with the signs of a general arteriosclerosis were revealed at the autopsy, but the lateral columns were unaffected.

Should Inebriates Be Punished by Death for Crime?—Dr. T. D. Crothers, of Hartford, Conn., said that inebriety in all its conditions is palsy and means serious impairment of the brain and its functional activities. He stated that the relation of free will and conduct are always obscured and free will and reason are abnormal; the brain anesthetized both locally and generally and profound psychosis exists. He believed punishment of inebriates for crime should be abolished and cited statistics tending to show that such punishment increased the crimes committed.

Dr. Brooks Beebe, Cincinnati, Ohio, did not recommend the abolition of the punishment of inebriates for crime, and felt that while the medical profession were agreed as to some grade of irresponsibility, yet the public needed protection.

Dr. S. M. Crowell, Charlotte, N. C., commented on the value of institutional treatment of inebriates, and referred to the fact that a bill was in course of preparation looking forward to the establishment of such an institution in Charlotte.

Autopsy Findings in Epilepsy.—Dr. B. Onuf, of Sonyea, N. Y., based his paper on autopsies performed at the Craig Colony. He exhibited a chart showing in detail the results of fifteen autopsies, giving in each case the age at onset and duration of the epilepsy, approximate number of attacks during life, distinguishing *petit mal* and *grave mal;* heart lesions (there being but one case that did not show some valvular affection) gross lesions in both hemispheres, thalmos, axis and cerebellum. He exhibited several photographs taken of the brains, both before and after the removal of the meninges, and stated that the cause of death in nine out of fifteen of the cases had been pneumonia. He also remarked that he had secured good results in the preservation of the bodies by means of an injection of 12 per cent. solution of formalin, and in conclusion urged careful auditory, ocular and physical examination and record.

Dr. W. G. Spiller, of Philadelphia, commented on the value of the clinical and aural symptoms and did not believe in stripping the meninges before studying the brain, feeling that careful study should also be made of it.

Dr. Onuf, in closing, remarked that while the pia was removed before the photographing of the brain, it had been preserved and studied.

Large Tumor of the Frontal Lobe.—The subject of Drs. Philip K. Brown, of San Francisco, and W. W. Keen, of Philadelphia. Dr. Keen read the paper, in which the clinical and pathological history and the operation were carefully outlined. The patient began in March, 1903, with bilious attacks followed by paralysis of the external rectus muscles, but no change in sensation. Complete hilateral anosmia developed about June and by the middle of July there had occurred a progressive loss of vision and mental dulness, progressive ophthalmoplegia and beginning left ophthalmos. The administration of Hg and KI produced no effect, and complete blindness followed the development of tenderness and pain on the left forehead and temple. A cerebral tumor of the left frontal lobe was diagnosed, and on August 5, an operation by means of a large osteoplastic flap of the frontal region was performed, which revealed the fact that the tumor, which was of the sarcomatous variety, had perforated the skull at several points and broken into the frontal sinus and ethmoidal cells. Owing to the size of the tumor removal was impossible, but in order to diminish pressure a portion was taken out. Recovery from the operation occurred, but local infection through the nose followed seven weeks later by coma and death took place.

Brain Tumor with Progressive Blindness.—Drs. W. C. Kendig and David I. Wolfstein, of Cincinnati, Ohio, reported this case. The patient was a traveling salesman, fifty-eight years old, with a history of syphilis and alcoholism in whom a diagnosis of possible paresis had been made, but which the autopsy revealed to be due to brain tumor.

Dr. Theodore Diller, of Pittsburg, Pa., reported several cases of brain tumor, in one of which the brain was eroded and there were protrusions and in another in which the bone was thickened and there were also protrusions. He also remarked the fact that Sir Victor Horsley performed operation of this character without the use of sutures in the dura mater.

Dr. Charles K. Mills, Philadelphia, Pa., commented on the differential diagnosis of brain tumors, and recommended early surgical interference, believing that an exploratory operation was justifiable in doubtful cases. He then referred to the fact that brain tumors of varying density and size might occur without producing headache, or any of the classical symptoms, or only one thereof, such as optic neuritis or optic atrophy.

Dr. Albert E. Sterne, of Indianapolis, Ind., reported the case of a station master who suddenly complained of pain in the left frontal region, accompanied by a delusion that he had made mistakes in his work and was to be arrested, etc. After going south for a vacation he became worse, was admitted to the sanitarium, and operation planned for the next day, prior to which time he had two convulsions and died, the autopsy showing infiltrating tumor of the brain.

Dr. F. W. Langdon, of Cincinnati, Ohio, reported in detail the clinical history of the case referred to in Dr. Wolfstein's paper, including the ocular and clinical symptoms for a number of years previous to his death.

Dr. F. X. Dercum, of Philadelphia, referred to two cases of cerebral tumor, in the first of which no pain was observed and in the other there was slight pain over the occiput, in each of which the tumor proved to be a sarcoma, and in the latter it was gangrenous.

Dr. W. G. Spiller, of Philadelphia, referred to the frequent difficulty of early diagnosis and reported several cases, among them being one of tumor over the pons extending down into the spinal cord, and the other in which there was thickening of the bone over the tumor due to infiltration of tumor.

Dr. B. Onuf, of Sonyea, N. Y., referred to cases of optic neuritis, in which accurate localization of the tumor could not be made, and raised the question as to whether it was advisable to operate at once in these cases, or wait until the tumor could be localized.

Dr. W. W. Keen, in closing, stated he believed it was advisable to insert sutures in the dura, even although the operation was slightly prolonged thereby, in order to prevent adhesions. He urged the necessity for early operation, not only in cases where the tumor has been accurately localized, but also in optic neuritis, such as the cases cited by Dr. Sonyea, and referred to cases in which the headache had been relieved by opening of the skull, although no tumor was removed.

Hysterical Delirium; Report of Four Cases.—Dr. Theodore Diller, of Pittsburg, stated that "insanity" as an expression of hysteria is apt to pass unrecognized as such when the patient is seen by two sets of observers—those inside and those outside of the asylum, as neither set of observers knows the case in its entirety. He referred to the fact that the delirium described by the Charcot school as the last phase of a "grand" attack of hysteria might occur as a more or less isolated symptom, and be so prolonged as to constitute a type of insanity, but that it exhibited certain marks which may lead to its recognition as an expression of hysteria. This he followed with the reports of four illustrative cases, all occurring in women of various ages.

Dr. Howell T. Pershing, of Denver, Col., reported the case of a young school girl, who first became unduly anxious about her school work, which was followed by talking much about animals and other nonsensical remarks, succeeding which she developed a state of delirium and continued therein for ten or twelve weeks, afterward making a good recovery, but having very little recollection of what had occurred.

Dr. F. X. Dercum, of Philadelphia, remarked upon the fact that cases of hysterical delirium were usually of short duration and felt that the temperature rise in one of the author's cases would rather point to an infection.

The discussion was closed by Dr. Diller.

Relation of States of Apprehension to Cardiac Disturbance.—This paper was read by Dr. William Rush Dunton, Jr., of Baltimore, Md., his observations being based on a study of twenty-five cases in the Shepherd Hospital and twenty in the Johns Hopkins. In the Shepherd hospital cases, five showed apprehension to a marked degree, three of which had cardiac lesions, and of the remaining cases five had marked cardiac lesions, but had never showed any signs of apprehension. Out of the Johns Hopkins Hospital cases eleven showed apprehension, in three of which there were various heart lesions and dyspnea.

Officers.—The officers of the Section for the ensuing year are as follows: Chairman, Dr. James H. McBride, of Pasadena, Cal.; Secretary, Dr. David I. Wolfstein, of Cincinnati, Ohio; Delegate to House of Delegates, Dr. F. W. Langdon, of Cincinnati, Ohio.

JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

Regular Meeting held April 18, 1904.

Visceral Crises in Connection with Skin Lesions.—Dr. Osler discussed the surgical importance of this affection. He first gave an outline of the principal causes of colic, dividing them into five groups as follows: (1) The intoxications (lead, uremia and morphine); (2) functional and organic diseases of the nervous system (hysteria, tabes, etc.); (3) supradiaphragmatic diseases (pleurisy, pericarditis, angina, etc.); (4) disease of the abdominal organs; (5) disease of the pelvic organs.

The first case described was a girl, aged seventeen years, who had been admitted to the hospital for abdominal pain, which for six months previous to admission had recurred frequently in the left epigastrium and side. An abdominal section had been done, but the condition of the abdominal organs had been found absolutely negative. The patient's knee-joints were swollen and tender, but there was no skin eruption, and examination was negative. She left the hospital well. Two weeks later she returned with recurrence of the pains, with nose-bleed and with one purpuric spot on the left flank. In the Johns Hopkins Hospital a case of hematuria with recurrent "kidney colic" accompanied by erythema and angioneurotic edema has occurred in the past years, and two other cases of abdominal colic with skin lesions. Several similar cases have been recently reported in the *Journal of Cutaneous Diseases*. The first was a boy, aged five years, complaining of abdominal pain, who was operated on for symptoms of intestinal obstruction. No obstruction was found, but in two places the intestine showed hemorrhagic infiltration, and the next day a marked purpuric rash appeared. The second case, a boy of seven years, with purpura and bloody stools, died. At autopsy, besides an intussusception, hemorrhages were found into the peritoneum. In the third case of severe recurring abdominal pain, congestion of the bowel near the ileocecal valve was found at operation and two days later a crop of purpura appeared. The boy recovered, but the trouble recurred, bloody stools appeared and another purpuric rash. The cases may be divided into six groups: (1) Colic with angioneurotic edema (Quincke's disease). This often shows a tendency to occur in families, as illustrated by the Rush family, of Bordentown, N. J., in which several generations were affected; (2) colic with urticaria; (3) colic with purpura. This symptom complex, in which abdominal pain, purpura and arthritis occur, is known as Henoch's purpura. (4) Colic with fugitive erythema. (5) Colic with combinations of skin lesions in the various attacks. (6) Long continued recurrent colic, with skin lesions appearing very late in the disease. Of 29 cases, reported by Osler, seven died, all of a complicating nephritis.

Henoch's Purpura.—Dr. Cushing referred to a patient who had been admitted to the surgical side of the hospital with pain, tenderness and a leucocytosis. She was prepared for operation, with the idea that there was some acute abdominal trouble, but a bilateral purpura was discovered accidentally, a diagnosis of Henoch's purpura made, no operation done and patient recovered. Dr. Atkinson referred to a case of his own, in which there was recurrent abdominal pain closely resembling attacks of gall-stone or kidney colic. The appearance of a marked erythema, however, made it clear that the case was one of a visceral crisis accompanying a skin lesion. He said that he had also seen the condition after the administration of the antitoxin of diphtheria. In this patient a violent erythematous urticaria appeared over the whole body eight days after treatment. With it there was edema in both eyelids and a slight arthritis. The symptoms promptly disappeared.

Dr. McCrae referred to the association in these cases of constipation with the abdominal pain. This was especially noticeable in the first case reported by Dr. Osler, and as a rule in these patients the pain disappears when the bowels move. It may well be, if the pathology of the condition is some sort of a hemorrhage into the bowel wall that the transudation accompanying catharsis gets rid of this exudate and in that way relieves the pain.

Immunization of the Dysentery Bacillus by Its Growth in Agglutinating Serum.—Dr. Marshall and Dr. Knox reported work which they have recently done in this line. The work was done to see if experimental corroboration could be given to the suggestion made by Dr. Welch in his Huxley lecture, that one form of immunity was due to a change not in the cells of the body, but in the invading bacteria themselves. The work was done by injecting pure cultures of the dysentery bacillus into bouillon tubes containing a small amount of serum which would agglutinate these bacilli. It was found by subsequent study of the organisms so treated that the bacteria had been changed so that they could not subsequently be agglutinated by the same serum; in other words, that their receptors had been either lost or so changed that they were no longer susceptible for this agglutinin. Study of the serum itself after centrifugalization showed that the change had not occurred there for it still continued to clot inoculations of organisms from fresh cultures. The same experiment was subjected to several modifications in order to test it in every possible way and control tests were made in every case. The organisms were also studied after transfer through a series of about eighteen tubes. The work showed that there is a type of immunity due to a loss of susceptible receptors. The most frequent type, however, is, of course, that in which immunity is due to an overproduction of antibodies. These experiments may explain the existence of so-called paratyphoid and paracolon bacilli, which would then be understood to be merely immunized forms of the organisms themselves.

Stated Meeting held Monday, May 2, 1904.

Hydrocephalus.—Dr. Cushing showed a negro baby of eight months with this disease. The patient, the second child of healthy parents, had shown signs of this condition for three months and at present the parietal bones were 10 cm. apart. All the separate cranial bones could easily be outlined by palpation. The contained fluid was apparently under

great tension and the child's head had been tapped—200 c.c. of clear fluid having been drawn away from the ventricles. Circulation of the cerebrospinal fluid probably takes place from the choroid plexus to the longitudinal sinus and thence out through the sinuses to the circulating blood and the heart. The escape has usually been thought to take place via the Pacchionian bodies, but as these are not present in young infants or in anthropoid apes, and as complete injections are possible in both, this idea is probably wrong. Internal hydrocephalus is certainly due to some obstruction but Dr. Cushing doubted that this obstruction is situated at the foramen of Magendie, as is usually supposed. The operation now done is a lumbar one. A preliminary lumbar puncture is first done to make sure of a connection between the ventricles and spinal canal. The fluid is usually found to be under great tension. A trephine hole is then made in one of the lumbar vertebræ by means of an abdominal section, a silver drainage tube inserted and the spinal canal thus permanently connected with the postperitoneal loose connective tissue. Dr. Cushing has operated on four cases in this way. The first died of intestinal obstruction, the second and third immediately after the operation, but the fourth is now living (six months after operation), and the head remains nearly normal in size.

Chronic Alcoholism in Bellevue Hospital.—Dr. Lambert reported a review of his experience in this institution. In the past nine years 51,000 alcoholics have been treated there and of this tremendous number 66 per cent. were between thirty and forty-nine years of age. Delirium tremens is usually thought of as primarily a nervous condition; but the effect of alcohol on the heart and circulation is its most important effect. So far as the life of the individual is concerned, alcohol gives an early vascular dilation. It causes a fall in temperature (the lowest temperature recorded in this series was 80° F. by rectum). There is a direct or indirect stimulation of respiration and an inhibition of proteolysis when liquors are drunk rich in alcohol or in extractive content. A moderate amount probably increases digestive powers. As a food it takes the place of an equal amount of isodynamic carbohydrate and so protects the proteids; but in large doses it increases the proteid catabolism. A series of 125 cases was studied carefuly by Dr. Lambert. He found that, as a rule, male alcoholics live longer than female. The autopsies showed frequent heart lesions. Brown atrophy and fatty degeneraion often occurred. In the lungs edema and congestion were most frequently seen. In the liver fatty degeneration was found in about 75 per cent. of the cases. Cirrhosis was frequent, though it is interesting that this condition has never been experimentally produced in animals. The liver was normal in no case. Chronic fibrosis was the commonest condition seen in the pancreas. The kidneys were never normal, the nephritis being chronic in all but two patients and the parenchymatous variety being most frequent. In the stomach atrophic gastritis was found in 50 per cent. of the cases. Atrophy of the ovaries was frequently seen. The brain was almost always edematous; acute and chronic meningitis occurred frequently, and atheroma of the cerebral vessels was not unusual. The essential pathological processes caused by alcohol in the various organs of the body are hyperemia, degenerations (particularly of the fatty kind), and connective tissue proliferation. The cases are often treated entirely for their nervous symptoms when the circulation needs treatment most. The symptoms vary markedly with idiosyncracy and with the dilution of the alcohol used. The habit of chronic alcoholism is often started quite young—in many patients of this series before twenty-one years. The drug is taken not for its taste but for the narcotic effect—that is either to produce certain feelings of artificial well-being or to drown sorrows, pain, etc. It is not the fusel-oil but the larger amount of alcohol for the same money which makes cheap whisky so dangerous. By the coating of the tongue and the character of the tremor the length of a spree may be quite accurately estimated. Hallucinations of sight are most frequent and of smell quite rare, the most characteristic feature being the belligerent attitude which the patients assume toward their delusions. An acute infection or a blow on the head may bring on delirium tremens in a moderate drinker. Beer causes the condition slowly but it leaves as slowly. Patients who drink absinthe are particularly liable to convulsions. In this series the mortality was 3 per cent., but in the cases in which ergot was used it was only 1½ per cent.

Dr. Welch referred to the complete report of the Committee of Fifty on the physiological effects of alcohol. It was found that in rabbits receiving daily intoxicating doses of alcohol, though some died of alcoholism, many lived healthy for periods as great as three years. The changes in the ganglion cells were among the most frequent pathological conditions found in the central nervous system.

Cystinuria.—Dr. Campbell reported on a study of this condition, in which it was found that cystin probably represents a middle product in the metabolism of sulphur.

Distomiasis.—Dr. Emerson referred briefly to a case of pulmonary distomiasis, reporting the case for Dr. Stiles.

BOOK REVIEW.

Commoner Diseases of the Eye; How to Detect and How to Treat Them. By Casey A. Wood, C.M., M.D., D.C.L., Professor of Clinical Ophthalmology in the University of Illinois, etc., and Thomas A. Woodruff, M.D., C.M., L.R.C.P., Professor of Ophthalmology in the Chicago Post-Graduate Medical School, Chicago, etc. G. P. Engelhard & Co., Chicago.

This little book is admirable in its purpose and execution. The authors state that it is intended to consider ophthalmology from the standpoint of the physician in general practice. It is proposed, they state, mainly by describing only the commoner diseases of the eye, never using a technical term when a simpler word is available, by numerous illustrations, synopsis headings, and a complete reference index, to popularize a study that is often considered difficult and unprofitable. The illustrations are excellent with a few exceptions, in which too much seems to have been attempted.

In a book with such a modest purpose, it would seem that less stress might have been laid on operative measures, and perhaps more attention given to the observation of variations from the normal. The description of ophthalmia neonatorum with its treatment, of trachoma, and of diseases of the cornea, should be especially valuable to the general practitioner.

The chapter on glaucoma is good, and the operative treatment is given sufficient space to enable the general practitioner to estimate the gravity of the condition. The method given on p. 262 styled "An easy method of diagnosing the commoner forms of inflammation of the eye" is excellent as far as it goes, and should be committed to memory by all physicians, but it is a matter of grave doubt whether in its application it would be always easy.

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ORIGINAL ARTICLES.

THE THEORY OF MUTATION IN ITS RELATION TO MEDICINE.[1]

BY JONATHAN WRIGHT, M.D.,
OF NEW YORK.

IN the discussion of the etiology of microbic disease, there enters, remotely it is true, but nevertheless irresistibly, a consideration of that long-laid specter which still starts up in every century of the history of science,—spontaneous generation. Scoff at it, deny it as you may, it is inevitably the direction toward which evolutionary science is drifting. It is foreshadowed in the monism of Häckel, it is touched but not demolished by the innovations of Mivart and of De Vries. Two years ago I had occasion to say:[2] "Certainly if evolutionary doctrine, if the fact of the mutability of the forms of life, means anything, it means that there has not only been a time, but there is every instant a time when matter is becoming endowed with vital energy which has the power to propagate its kind." This was but an unconscious echo of the tendencies of modern biology.

To gravely assert that "the origin of the germs of disease was probably in the remote geological past" is on a level with the faltering plea of a former generation that God ceased His miracles when man began to inquire into them. This drift of modern thought in biology is voiced in the bold suggestion contained in the essay of Dr. Bastian,[3] "On the great importance, from the point of view of medical science, of the proof that bacteria and their allies are capable of arising *de novo*." It is an emphatic plea for the acceptation of the heresy of spontaneous generation. As I have intimated, I am very much disposed to be that kind of a heretic myself, but in the light of recent researches, especially those of De Vries, we are not yet driven to the extremity of Dr. Bastian's suggestion.

I believe the theory of mutation in biology, if it is settled in the affirmative, will have a very important bearing upon our knowledge of the etiology of disease, and this must form an excuse for its intrusion in a medical essay.

It is known to all familiar with Darwin's work that one of the greatest objections, with which the early evolutionists had to contend, was the extent of geological time necessary for the evolution of higher animal life on the theory of natural selection, or in the better chosen term of Spencer, the survival of the fittest. As is well known, Agassiz, to the last, utterly rejected the idea, pointing out the evidence of the sudden appearance on the earth of the lower vertebrates. Mivart so modified the conception as to provide for the sudden birth of species. Darwin himself, though unable to adduce evidence of it even from his stupendous command of facts, expressed the idea that there might be sudden great variations in animals and plants, which, seized upon by natural selection, might produce more profound modification of the structure of living beings than seemed possible in the small range of individual variations on which he pointed out that natural selection does act.

De Vries, a naturalist of Amsterdam, has declared that such shocks or jumps in the life history of species is a fact and that such changes and not the slow process of Darwin are really the origin of species. By experimentation with many varieties of plants, from which he selected the primrose for more extended study, he has observed changes, which he calls mutations, and these changes were so sudden and profound that he has come to believe that all species at some time in their life history exhibit an excessive instability from which new and distinct forms arise. "A mutation occurs when one species is formed from another." "A species changes only when it produces others. Or, rather, it does not change, but continues to exist next to the species newly formed."[1] At these times the species are said to be in a period of mutability. With the primrose, De Vries declares that the rate at which he observed new forms, which he dignified with the name of species, was at the ratio of 1.5 per cent., *i.e.*, out of 100 plants arising from seed from one to two new species would be found. "Many species multiply exceedingly rapidly when they are transported to a new region where the conditions are favorable." It seems that it is then that the period of excessive mutability is apt to appear. He admits that the vast majority of the new forms perish from lack of adaptation to their environment.

Now, parenthetically, I must disclaim any ability to act as a critic of this idea of De Vries. It may or may not be similar to that of Mivart. I cannot see how the view of Dastré[2] is justified. I cannot see how it in any way upsets the fundamental idea of Darwin. It seems, if the facts have been properly interpreted, rather to amplify and establish it. I see little difference in principle whether the fittest of these great variations or the fittest of the smaller individual variations survive. It is, of course, a great discovery if true, but it by no means abolishes the necessity for natural selection. Dastré's remark that natural selection causes the death but not the birth of species, is sacrificing accuracy to epigram. Hitherto, in the discussion of evolution, it has not been neces-

[1] Received for publication March 28, 1904.
[2] New York Medical Record, June 26, 1902.
[3] The Lancet, October 31, 1903.

[1] Popular Science Monthly, April, 1903.
[2] Revue de Deux Mondes, July, 1903.

sary to point out that a "sport" or a "mutation" form which immediately perishes seems hardly to be the birth of a new species, any more than a still born or sterile child is the progenitor of a new race.

As I have intimated, I am incapable of judging as to whether these examples of De Vries are recessive and degenerate forms which would all perish from debility were they not artificially grown. If we are to allow degenerate changes to the extent he has observed, I see no reason for denying the possibility of the changes which would survive and propagate under natural conditions. It would seem likely that future observations will show that De Vries has observed extremes of variability, and that there are many intermediate grades from small individual variations up to the forms radically different, capable of propagating their kind and incapable of inbreeding with the parent stem.

I simply desire to point out here, as Dr. Bastian has done for spontaneous generation, how important "the theory of mutation" is to the conception of microbic disease. Let us reflect how it would apply to what we know of the history of contagious diseases, and how we might explain an apparent gap in medical history.

In the decades preceding the middle of the last century, it was the common belief that from time to time the character of certain diseases changed in their clinical manifestations. That, for instance, during a longer or shorter time pneumonia presented sthenic types, suitable for bleeding, followed by asthenic types when such procedures were disastrous. It is occasionally heard to-day from stubborn skeptics, that the type of diphtheria has undergone a change from the severer infections of the days before the introduction of antitoxin, to the milder forms which are exhibited by cases to-day when antitoxin is in universal use. Apropos of this point one need only peruse the descriptions of throat inflammations in the works of Hippocrates to perceive that diphtheria is not sufficient to account for the severity of the cases with which he had to do, while they were much more numerous than the corresponding type of Ludwig's angina, which is a curiosity in modern laryngology. It appears probable that the ancients had forms of throat disease to treat other than we observe to-day. In the history of smallpox and phthisis we are familiar with the rapidity with which a previously isolated race of savages is all but exterminated by the irruption of these diseases among them.

Men have grown more instead of less migratory since Attila poured his Huns into Italy, but to-day it is individuals, not nations, who migrate. The contrary was the rule in the dark ages. The period before the Renaissance was marked by the migrations and the first intercommunications of various branches of the Indo-Germanic races. This was preceded by a period of restlessness, and of migrating invasions into Europe by the yellow, Tartar-Mongolian hordes under Attila, and these only terminated at the death of Genghis Khan. It is in this period of upward of a thousand years after the fall of ancient Rome that we seek the origin of smallpox, scarlet fever, measles, whooping cough, influenza, possibly even syphilis. I am not prepared to say that none of these existed in the five hundred years which stretch from Hippocrates to Galen. It is quite likely, as I have elsewhere pointed out, that the birth of new knowledge, the Renaissance, permitted the differentiation of various diseases not possible even in the palmy days of ancient Greece, but there were men in the world then of as acute a mentality as have ever existed since and yet, empirical classification aside, we search the ancient pages in vain for any sure indication of many a scourge which has since ravaged civilization.[1]

Do the cataclysms of the history of mankind which followed the fall of Rome and ended with the Crusades stand in the same relation to the birth of microbic disease, as do the upheavings of geological strata to the birth of species in the fauna and flora of the world? Did smallpox or scarlet fever spring from some harmless protozoon of the pre-Renaissance? Is measles a side issue of scarlatina? Is the same true of smallpox and cowpox? Did whooping cough originate from influenza?

I do not know whether these questions have been asked before, or whether an answer to them has been attempted or not. If the postulates of De Vries are established, there would seem a hope of knowing something of the origin of disease without tracing it back to a remote geological past, unchanged and unchanging.

The problem is a mixed one, as are all questions dealing with etiology. Change of food, climate and habits must as surely modify human cells and their products, with which students of immunity are at present so absorbed, as do these soils alter the bacteria which feed on them. Thus we may suppose many diseases as the resultants of primordial changes in the cell and the microphyte entered in the dark ages upon a period of mutability similar to the primrose in Holland, after it was carried there from America in 1613.

It is true that this is vague and speculative, but if plants may originate from "others by sudden but small changes, often so small as to be hardly visible to the neophyte, surely diseases may do the same." In the pre-Renaissance they seem indeed to have originated with a shock or jump and since then they have been more or less constant except for the minor changes to which I have alluded as changes in type. Just as with plants they may have been formed from a mother disease which may still exist.

If we are not familiar with radical changes in bacteria, we are becoming familiar with their minor variations, not only of form, but of function in the production of poisons to the animal cell. The tubercle bacillus, we are learning, is a pleomorphic microphyte, with as marked variations of function as of form, but we know nothing yet of the birth of a new species from it, and yet,

[1] The Nose and Throat in Medical History.

though tuberculosis is one of the most ancient of diseases, in view of what has been said above, we may be permitted to imagine, that in prehistoric times some hay bacillus in a period of mutability acquired that minute but sudden change out of which has been evolved the tubercle bacillus deadly to many widely separated groups of animals.

There is a significant fact to bear in mind. The newer the disease, the more limited its range among animals. Phthisis and pneumonia are coeval with the dawning of the history of man; diphtheria can be traced back to the Babylonian Jews. Reports of the influenza are hardly recognizable in the medical literature of the Greeks and Romans but they were the first to emerge from the obscurities of the dark ages. These diseases, somewhat in the order I have mentioned, are widespread in the animal world, but syphilis, smallpox, whooping cough, scarlet fever, measles, of later historical mention are also markedly less widespread in the animal kingdom.

Any student of medical history, familiar with researches in the wider fields of biology, must be struck, in the narrower domains of bacterial research, with the phenomena exhibited by certain families of microorganisms, among which are found parasites poisonous to man. The tubercle bacillus, varying only slightly in form and growth from the hay bacillus, mounts in virulence to man through the turtle and fish bacilli to the microphyte of phthisis pulmonalis. Amidst the great number of reported actinomyces only a few apparently poison the human cell, yet their morphology is all but indistinguishable. I'm not enough of a bacteriologist to speak as to other groups, but I am confident that better equipped observers could point out analogies elsewhere. Considering the countless numbers and the immense rapidity of their multiplication, can we imagine any other division of life in which, so readily as in unicellular organisms, could arise "those changes so small as to be hardly recognizable"? We must seek the evidence of it in the diseases they cause.

It seems to me, therefore, however sympathetic we may be towards Dr. Bastian's belief in spontaneous generation, the phenomena, both biological and historical, of microbic disease do not necessitate its assumption, and we have little ground for it in facts hitherto presented. We should keep it sharply in our minds that, whatever may be the trend toward this view, the labors of Löwenhoeck, Spallanzani, Virchow, Tyndall and Pasteur in the last two hundred years and more, have definitely thrown the burden of proof on its future advocates.[1]

[1] In the mail with this proof came the July number of the *Popular Science Monthly*, which contains an extensive review of recent work relative to the theory of mutation, to which the reader is respectfully referred, as it comes too late for the incorporation in this thesis of any facts which may bear on its application on medicine. It is written by Professor Hubrecht, a Dutch zoologist.

Appointment of Dr. Meyer.—It is announced in the new catalogue of Cornell University that Dr. Adolf Meyer has been appointed Professor of Mental Diseases.

RACE SUICIDE FROM THE GYNECOLOGICAL STANDPOINT.[1] [2]

BY EGBERT H. GRANDIN, M.D.,
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IN medicine, as in other walks of life, it is wise to pause at times and to strike a balance. In particular is this true of the department of medicine which my audience cultivates, for in none has there been more ceaseless activity, in none more varying phases of change,—often not of the progressive type.

From the dawn of history woman has been a problem, and her indecision of mind and of body has caused man anxiety untold—it may be because of his equal indecision in make-up. As we stand on our eminence of to-day, and look backward into the valley of gynecology, rich in names of great departed, teeming with much which seemed truth and yet with what to-day we look upon as error, we are far too prone to swell with pride in consideration of the greater light at the summit, yet as we look beyond, toward the future, rash would we indeed be should we venture to predict the brightness ahead. Reflect, however; consider deeply; sift the chaff from the wheat, and you will find that even to-day we are groping in the dark and facing problems of greater moment than the past ever offered, at times indeed, grappling with similar problems as yet unsolved, and as far as human ken—if unbiased—can predict, unsolvable.

Wander back and see the man of immortal memory bent on solving the problem of the cure of vesicovaginal fistula; trace the gradual evolution of pelvic surgery and its merging into the abdominal; think of the years of bodily and of mental toil involved in the elucidation of the cellulitic doctrine and its burial under the weight of the peritonitic doctrine; reflect on the problems offered at the time when the mechanics of the pelvis appealed more precisely, and of the pyramids of pessaries erected only to crumble; consider the age of the intrauterine applicator, of the tampon, of the pelvic 'tinkerings," of the electrical fads. The men who struggled mightily to solve the problems of those days were as honest in intent and as strenuous in endeavor as you and I are to-day, facing as we do the problems of the present and laying the foundations of manifold problems in the future. Notwithstanding the fact that we are better equipped than our gynecic forefathers were, for we possess accurate asepsis, absorbable ligatures, deep experience derived from ample invasion of the peritoneal cavity,—when we strike the balance the enigmas offered us, the dilemmas we are astride of call for the same struggles toward solution as those so well mastered by Sims, Peaslee, Emmet, Thomas, Tait, Spencer Wells, and your own Busey.

Medical gynecology has wellnigh been shelved. The aim, the ambition is surgical. Too often the

[1] Read, by invitation, before the Washington Obstetrical and Gynecological Society, March 4, 1904.

[2] Received for publication March 10, 1904.

uterus, the tubes and the ovaries are roughly handled when the liver, the kidneys, the intestinal tract, constitute the elemental problem. The medical press teems with socalled new suggestions, and old methods resurrected and dubbed novel. The wheel turns, and too frequently the index points to the past, the needle beyond the pelvis, and the new methods and devices become ghosts and nightmares of torment to us. A little more discretion, a little more thought, a little less eagerness in the solution of pelvic and abdominal problems, might spare us many a Waterloo.

In allied branches of medicine, we have seen the practical stamping out of yellow fever from localities wherein it had been endemic for ages; we have witnessed the discovery which nearly robs that scourge of the past—diphtheria, of its terrors; medical men are armed for the extermination of tuberculosis, to such a degree that Boards of Health in many localities demand its report under penalty; puerperal sepsis has wellnigh been eradicated wherever the puerperal woman is under conscientious and educated care; active minds are at work in the endeavor to isolate the germ or toxin of that scourge of the human race,—cancer; such is the record of the present. And yet, to-day, the gynecologist and his broader brother—the general practitioner, appear apathetic in reference to greater scourges, such as those to which I ask your attention tonight.

The problem of great moment which faces us at the present—and I have in mind now not alone gynecologists but also the general practitioner—a problem which is as knotty a one as any which offered to our forefathers, is that which has been not inaptly termed "race suicide."

To the layman "race suicide" means the unwillingness of man to procreate, or of woman to bear children, either because the exigencies of life are so strenuous that it is of vital moment that no more mouths should be opened for food than there exists the wherewithal to supply the food, or else because the demands of social life appeal more to man and to woman than the honor of being termed father and mother. Hence arise resort to the manifold measures for the prevention of conception, and the solicitations to which we are constantly subjected for the interruption of gestation in those who, having sown the seed, should of right carry it to full growth.

This phase of the question concerns us as citizens. The definition is entirely too restricted to satisfy us as physicians and gynecologists. The problem is very complex. The race is suffering from the effects of suicide far more because of inaptitude for conception than from disinclination to assume the obligations which maternity may entail. Disease of the reproductive organs—acquired innocently or deliberately implanted, this is the medical side of the problem—the side with which you as gynecologists are so familiar. Furthermore, immature, incomplete, uncalled-for surgery on the pelvic organs,—this offers another aspect of the problem. To reach a solution of this vital problem, I invite your attention to the chief cause of "race suicide"—the gonococcus, and I shall ask you to endeavor to devise with me the solution of the problem of its extermination, the outcome of which would be a victory greater than any yet won concerning racial integrity, the more so because thereby the gynecologist would be deprived of nearly sixty per cent. of his operative work. Surely a very unselfish aim, and yet in line with that which constitutes the brightest jewel in medicine's crown—preventive medicine.

In the first chapter of Genesis we are told the story of the marvelous creation and the story of the lamentable fall of man. Milton, in his exquisite verse, thus describes a mental trait of our distinguished ancestor, Adam:

> "This woman whom thou madest to be my help,
> And gavest me as thy perfect gift, so good,
> So fit, so acceptable, so divine,
> That from her hand I could suspect no ill,
> . . . . . .
> She gave me of the tree I did eat."

History repeats itself! Let women to-day consult us for the relief of sterility, and man says "it is the woman's fault." Before I have finished with him I shall state facts which should cause the cheeks of this miscalled "lord of creation" to blush, since it is on his shoulders that the blame for the vast proportion of sterile marriages lies, and this is tantamount to "race suicide."

The laity do not realize, and we, as physicians, do not lay sufficient stress in our teaching, on the preponderating influence played by man in the causation of sterility in woman. Ruling out the deformities or the malformations of the male genital organs which deprive him of the power of doing his share in the act of procreation, let us consider man as fully endowed with the *power*, and next consider the manner by which he deprives himself of the power. And further, let us never forget that the faculty of performing the sexual act by no means entails the ability to procreate. Thus then, in laying the onus for the greater proportion of "race suicide" we acquit a fair proportion of males who are impotent through no fault of their own. Possibly the mumps, possibly the acute exanthemata have reacted to such an extent on the seminal vesicles as to have deprived them of function. In about six per cent. of sterility in woman, the etiological factor is man possessed—perhaps—of the power of performing the sexual act and yet lacking the elements which are essential to fecundation. Examination of the semen will at once rule out this small class from the wearing of the onus of blame. Such men we can but pity. The disease which enters chiefly into my argument to-night, as the main factor in the production of "race suicide," is of a different type, since it is acquired deliberately on the part of man—too often, under our present system of education, because man has never been properly warned in regard to its un-

toward consequences on woman, should he enter the state of matrimony.

It is only on reflection and close consideration that the physician realizes the extent to which gonorrhea is responsible, not alone for "race suicide," but also for disease in woman and for blindness in the child. To speak alone of sterility —it has been estimated that nearly 60 per cent. of males have gonorrhea, either acute or latent, and you will recall in the latter respect how cogent to-day is the conclusion reached over a quarter of a century ago by Emil Noegerrath which, in his time, called largely for derision. Nearly 45 per cent. of sterile marriages are traceable directly to gonorrhea. To strike an eminently fair average, in case of sterility, man is at fault in about 20 per cent. This is a percentage based on direct sterility. When we consider the diseases of woman which are traceable to gonorrhea—such as those which involve the tubes, the ovaries, the uterus, and thus interfere either with insemination or with the progress of pregnancy, a fact which in the end amounts to sterility, the percentage of blame attachable to the male rises greatly. I venture to state that it is a fact familiar to all of those present, that were it not for the operative work derivable from abdominal sections performed for disease of the uterine adnexa due to gonorrhea, 60 per cent. of this work would be uncalled for. Thus, in salient figures, appears man's rôle in the production of "race suicide" from the standpoint of gonorrhea.

It will be of moment to interpose here a few words in reference to another coccus which man frequently injects into woman with the result of adding to his already heavy burden of blame for "race suicide"—I refer to the coccus of syphilis. This coccus, whether acquired innocently or not, renders woman incapable, to the fullest extent, of performing one of the purposes for which marriage was instituted—the propagation of the human species. The rôle of syphilis is not by any means as marked as is that of gonorrhea, since the germ of syphilis is not so apt to prevent conception. Woman conceives, but, as a rule, she miscarries, and this, to all intents, amounts to sterility. Therefore, it has become the rule among us, that when a woman is sterile, for the reason that she has never born a child to term, we investigate the man's record.

In short, sterility in woman dependent on disease of uterus, tubes or ovaries, may in about 50 per cent. of the instances be settled by saying: "Ask the man," and he is the so-called lord of creation, strutting about after a fashion which should make the peacock blush. Of all the animal creation he shows the least regard for his mate in that he inserts into her system germs which not alone render her incapable of performing that function so dear to every good woman's heart—the bearing of children, but also implants in her diseases which in the course of time send her to you and to me for operation. I have dealt with man harshly, and yet, poor devil, it is not always his fault. Owing to our utterly inadequate educational methods in matters sexual, owing to the bated breath under which the words gonorrhea (clap) and syphilis (pox) are spoken by fathers and by mothers and by educators and pastors and legislators and, far too often to their shame, by physicians, the youth of our land enter into the nuptial contract utterly ignorant of the consequences, to the women they have sworn to guard and to protect, of an uncured gonorrhea or syphilis. This is where our responsibility as physicians and as gynecologists rests to-day. This is the problem facing us—the education of the laity in regard to the significance of these scourges, these social evils, these causes of "race suicide." I have endeavored to show that man is responsible for sterility in woman in fully 50 per cent. of instances. Could a nobler work be performed by us than to start a crusade—and not, as in the past, a silent one, against these diseases which are responsible for "race suicide," in its true sense, through the inculcation of knowledge in the minds of parents and the laity, as a body, in reference to the necessity of instruction of the young man as to the risks he runs personally, should he acquire them, and as to the risk he subjects the woman he marries should he carry them to the nuptial couch? Should we, through our moral influence along these lines,—and the only possible lines, be enabled to exterminate the gonococcus, preventive medicine would make the greatest of all strides, and yet we, the operative gynecologists, would be deprived of nearly 60 per cent. of our work! Woman, however, would be the gainer, the human race be immeasurably increased, "race suicide," as an opprobrium, would cease to be spoken of, and the unselfishness of the true medical man would again stand strongly in the foreground.

From the present standpoint, man is not the "lord of creation," but the "exterminator of the species." Kill the gonococcus by teaching man the danger to woman and to the species should she acquire it, and then man returns to the condition he is pictured as having been in before Eve tempted him with the apple and he weakly said to his Maker: "It is the woman's fault." The average Eve is ready to procreate: the average Adam is unable—chiefly because of disease acquired in ignorance of its foul sequelæ.

Would we tolerate the entrance into our homes of a man the victim of smallpox? Should we tolerate his entrance with great pox? The day is not far distant, should we do our duty along educational lines, when fathers and mothers will require a clean bill of health from Adam before he is allowed to defile Eve. In any event, Eve is entitled to know the consequences of mating with a foul Adam. When this devoutly to be hoped for day arrives, there will be in the land fewer Rachels weeping for their children, and not to be comforted, because they are not.

As I have reiterated above, according to my light, the solution of our problem lies in education. Prostitution—the social evil, is responsible to the greatest extent for the dissemination of

gonorrhea and of syphilis. In the toleration of this evil by society too much stress has been laid upon woman's part in dissemination and too little on man's. As has been customary with the latter from the beginning of the world, he points the finger of scorn at woman, he abets woman in the making of the prostitute the social outcast, and yet, were it not for the solicitations of the man, for his untrammeled licentiousness there would be few prostitutes. It is time that there should cease to be recognized a different code of morals for man and for woman. That which is wrong in woman is equally wrong in man, and in face of the diseases under consideration the man is the chief offender and the finger of scorn should be first aimed at him. The starting point in the crusade should be the inculcation of this fact into the minds of the laity, and for this we need a new and a radical system of education.

Segregation of the female prostitute, licensing, these and other measures have been tried and without avail, because, much as we segregate her, the male prostitute is in nowise restrained and exercises his prerogative of making new female prostitutes. The sexual instinct is a God-given instinct, its purpose being the perpetuation of the species. Man, largely through ignorance of the calamities following the misuse of this instinct, has converted it into one of extermination of the species. Ignorance being at the bottom of his folly, it follows that man, at the age when this instinct is established, should be educated in reference to its purpose and also in regard to the consequences if the instinct be misused. In how many families, not excepting that of the physician, is the pubescent youth instructed by his father or by his teacher in regard to sexual matters, which not alone concern him deeply but chiefly the woman—pure in every sense until he defiles her? The crusade of extermination, therefore, of these "race suicide" diseases, should begin in the family, and where more fitting place than in the family of the physician, the man who above all should be an exemplar in the matter under consideration? I take it that the average young man approaching puberty is not foul at heart. He has the making of the libertine in him, however, if he be turned loose to graze without the halter. Bridle him well through education in matters sexual, and I believe that at least one-half of the present percentage of these foul diseases will disappear. There remains the born libertine! the man who will not be educated! the type of man who glories in his conquests and boasts of the number of times he has had the clap. This man will continue to make prostitutes, this man will continue to befoul woman, and for him repression is the remedy. The laity is being educated in reference to the methods for the prevention of the dissemination of tuberculosis, educate similarly the laity in respect to these social diseases. In time there will arise in the land a loud cry calling for the suppression of the professional libertine, if need be by laying the strong hand of the law upon him. If you cannot appeal to the reason of such an animal, you can always appeal to his fear. These views may appear Utopian and I grant that to attain them calls for the shaking off of many a shackle handed down from ages. More difficult victories have been won, however, firmer bonds have been broken, and all other means having been tested and having failed after a most lamentable fashion, legislation must finally be invoked to check "race suicide" as we, the gynecologists, view it. Yet another phase, and this is the education of the young girl. We teach our daughters at the marriageable age the risk they run should they mate with the drunkard; we endow them with all the knowledge and the graces which enable them to shine in whatever social sphere they may be called upon to enter, yet, we tell them nothing about their sexual life and do not warn them against marriage with the libertine. Why should we educate the boy and not the girl? It is on her shoulders that shall lie heaviest the burden of infection. It is she who will weep for the children she lacks because of the foulness of man. It is her inherent right, therefore, to be educated in matters sexual, that she may avoid the rocks which otherwise her health and her life will strand upon. Nowadays, when the old-fashioned family doctor, the friend and the counselor of the family from birth to old age, has been eliminated, the gynecologist, in matters sexual, must take his place, and here within your grasp lies another victory to be won, another jewel to be placed in gynecology's crown. Of necessity you are brought the closest to the woman, and it is your right and your duty by dropping an advisory seed here and another there to open her eyes to facts which otherwise she may not learn. The sexual hygiene of woman extends even to the nuptial couch and we may properly tell the girl through her mother, or directly, that the man she is about to mate with should be required to submit a clean bill of health, lest all the voyage of her life be bound in shallows and in miseries. But this infringes upon the so-called professional secret, and here is another shackle to be broken. Let the laity look upon these diseases in their true light—as scourges to the race, fouler far than smallpox, than yellow fever, than diphtheria, and the laity will promptly place them in the same rank and be ready to join us in stamping them from off the earth, and the code of secrecy shall no more apply to the one than to the other.

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STERILITY DUE TO ABNORMAL CONDITIONS OF THE UTERUS.[1] [2]

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In this brief paper it is my purpose to discuss only the more common abnormal conditions of the uterus that may give rise to sterility. I

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[2] Received for publication March 28, 1904.

shall endeavor to treat the subject from a practical standpoint, basing my statements chiefly on personal experience. To treat the subject exhaustively would require much more time than is allotted to me, and would not serve the aims of this discussion.

Sterility due to the uterus must be classified as primary and secondary. Primary sterility is that form in which the patient has never conceived. Secondary sterility is that form in which the patient has borne one or more children, but the last pregnancy and consequent delivery or other processes, has induced such changes in the uterus that the woman is unable to conceive subsequently.

PRIMARY STERILITY.

The most frequent cause of this form of sterility is the various degrees of arrest of development of the uterus. We will not enter into the various malformations that may result from an arrest of development, as good descriptions of them may be found in the various text-books on gynecology and obstetrics. What chiefly concerns us here are those degrees of arrested development that result in a uterus that is slightly below the normal size, or in a uterus in which the uterine or cervical canals are at an abnormal angle. Before we can form a good conception of this we must keep in our mind's eye the size and form of the uterus at the different ages ranging from infancy to puberty and adolescence.

I may state right here that the gynecologist finds no more difficult problem to solve than the determination in a given case whether or not the sterility be due to a uterus that is not sufficiently developed. How often does one hear that such and such a prominent gynecologist has told a patient she could never conceive as her uterus was undeveloped, and the woman shortly thereafter became pregnant and went to full term! So fully am I impressed with the pitfalls in this connection that I am always very guarded in my statements when on examination I find a uterus that is below the normal standard in size and shape. Less than a year ago a gentleman and his wife were here from Paris on a visit, and consulted me in reference to sterility. They had been married two years. The notes of my local finding were as follows: A decidedly small uterus, with an acutely anteflexed cervix, the body lies rather far back toward the sacrum and is drawn to the left side.

Diagnosis.—Arrest of development with retrodisplacement. I advised dilatation and curettage as a means to relieve the rather severe dysmenorrhea, but did not hold out much hope that it would cure the sterility. Nor did I state that the condition I found would account for the sterility. It is probable I passed a sound into the uterus, though there is no note to that effect in the record. My advice was not taken, as their stay here was of too short a duration. On their homeward trip the expected menses did not appear, and to be brief, about two months ago the woman was delivered of a girl at full term.

In the foregoing case, the passage of the sound may have removed a plug of mucus in the cervix and thus favored the conception, or what may be just as probable, is that my examination was merely incidental, and had nothing whatever to do with the conception that took place so shortly afterward.

Further, it calls for a great deal of experience in bimanual examination to be able to say definitely that the uterus is not of the size corresponding to full development. The sound is not of great assistance in these cases. I seldom employ it. Notwithstanding all this, and recognizing that errors are frequently made, one can, in the vast majority of cases, distinguish a uterus that is so far below the normal as to be the cause of sterility.

In my experience the most frequent form of arrest of development giving rise to sterility is that which results in a very small uterus, one not much more than half the size of the normal organ, with the cervix acutely anteflexed upon the body. In these cases both the cervix and the body are proportionately small. Menstruation, as a rule, sets in late, in the seventeenth or eighteenth year, is rather scanty, may or may not be attended with pain, and is usually regular until marriage, after which it becomes irregular, appearing only every two, three, or six months, and after two or more years may cease entirely. This is a singular phenomenon and is just the opposite to that which we might expect from the stimulation attendant upon sexual cohabitation.

These cases are, as a rule, hopeless. I know of no form of treatment that will benefit them, but I do know of several cases in which great harm had been done by the so-called treatment for developing the uterus.

The next most frequent variety is that which is commonly known as the "infantile uterus," with a long cervix and a very small body rather acutely anteflexed upon the cervix. Anyone who has examined a great number of these cases can readily distinguish them on account of the great disproportion between the body and the cervix. In palpating them one is reminded of an individual who is all legs and who has scarcely any trunk.

Dilatation and the insertion of a stem pessary for a week or longer are sometimes attended with cure in these cases. The prognosis is generally good if the patient is still comparatively young, let us say under twenty-five years of age.

The third variety is that which is generally described as "congenital retroversion." Both the cervix and the body are comparatively long and slender and seem to be in the same axis. The body lies retroverted to the first or second degree and considerably to the left of the median line. In these cases the arrest of development seems also to involve the ligaments, especially the broad ligaments, as well as the uterus. It is this form which baffles most surgical procedures, for remedying the existing displacement, owing to the poorly developed and short, broad ligaments.

When a ventrosuspension or a ventrofixation is attempted the operator frequently finds he is unable to draw the body of the uterus up to the abdominal parietes. Even if he succeeds in suturing the body to the abdominal wall, in a very short time it will be found in its old faulty position, so great is the traction of the shortened broad ligament upon the uterus. Great judgment is required to differentiate these cases from those of retroversion brought about by inflammatory changes of the pelvic structures.

So far as treatment in these cases is concerned, my experience is that no surgical procedure of which I am aware will cure the sterility. I do not wish to express thereby that these women are doomed to sterility. Some of them become pregnant and go to full term. But when they do, it is not on account of any surgical method that may have been carried out, for the position of the cervix is such that there is no hindrance to the entrance of the spermatozoa to the uterine canal. When conception does not take place the fault lies elsewhere than in the position of the uterus. It is usually because the development is so far below the normal that the uterus is unable to perform the function of generation.

The other common forms of malformation on the basis of arrest of development that are usually attended with sterility are (1) a peculiar formation of the vaginal portion known as "conical cervix," and (2) the occurrence of a very minute os externum, known as the "pin-hole os."

The conical cervix is very characteristic in its shape and is easily recognized. It is best detected either by digital examination or by Sims' speculum, as the bivalospeculum puts the vaginal mucosa of the vaginal vault on the stretch and alters the shape of the cervix. The cervix has a decidedly tapering appearance and frequently the anterior lip is sharp and stands out very prominently. It is in this form that the transverse ridges on the anterior aspect of the cervix are frequently observed. They were first described by Saenger, and to my mind are due to redundancy of the vaginal mucosa owing to the diminished caliber of the cervix. If the remainder of the uterus is fully developed, as it may be, the results of stretching of the cervix with the maintenance of the dilatation for a week or longer by a stem pessary or gauze packing is usually attended with good results.

Pine-Hole Os.—The os externum, to justify such a designation, must be exceedingly small, not larger than the caliber of a small surgical probe. Some of these cases give the impression of being secondary to an endocervicitis in infancy or childhood. As a rule there is an accompanying endocervicitis, but this, however, may be the effect rather than the cause of the stenosis, and may be due to imperfect drainage. If the stenosis of the os externum is the only abnormality the prognosis is generally good. A mere stretching is seldom sufficient. Some plastic surgery must be done to make a new, good-sized os. Olshausen is of the opinion that stenosis of the os internum is more frequently the cause of sterility than that of the external os. In my opinion both varieties are not infrequently met with. This much is certain, that there is less risk of an error in diagnosis in stenosis of the external os than in stenosis of the internal os.

Some authorities deny that stenosis of either os can be the cause of sterility. They maintain that if the menstrual blood can escape from the uterus, the passage must be large enough for the entrance of the spermatozoa. There seems to be some force in this argument, for it is surprising through how minute an opening the spermatozoa may enter into the genital tract and impregnate the ovum. Some years ago I excised a hypertrophied hymen from a woman who was four months pregnant. No point of entrance in the hymen could be seen until it was held up to the light, when an opening not larger than a pin point was detected in its center. The excised hymen was double the thickness of the ordinary vaginal wall. Of course, in the case of the stenosed cervix there is always some mucous discharge. The force of the flow of blood from the uterus is sufficient to drive the mucous plug before it, while, on the other hand, the mucous plug may serve as a sufficient barrier to the migration of the spermatozoa upward.

Malpositions of the uterus in the nullipara may exist from other causes than arrested development. Retroversions of the uterus without the characteristics known as congenital I have seen in young women time and again. It is not my province in this paper to discuss their pathology. Whether they are always due to inflammatory processes of the adnexa and the pelvic peritoneum, is a matter of dispute. Let their pathology be what it may, this I know, that such a malposition may be the cause of sterility, and that impregnation frequently follows if the displacement be corrected, be it either by means of a suitable pessary or by some proper surgical procedure. Impregnation may occur in these cases even without correction of the malposition, but the pregnancy is usually interrupted between the second and fourth months.

Pathological anteflexion of the uterus not of developmental origin is not an uncommon condition, and is prone to be attended with sterility. There is scarcely any other disease of the uterus in which errors of diagnosis are so frequently committed as in this one. The reason is obvious. Normally the cervix is in a position of a certain degree of anteflexion, and even specialists with vast experience will differ in a given case as to whether the existing anteflexion is within normal bounds, or comes under the head of the pathological variety. If it were possible to define in a few sentences the points of differentiation between a normal and a pathological anteflexion, the preceding sentence would be not only superfluous, but not in accordance with the truth. It is useless, therefore, for me to endeavor to state the points of differentiation.

Schultze's dictum that the pathological ante-

flexion may be recognized by its immobility is more euphonious than practical. In my own practice I am guided in my diagnosis of a pathological anteflexion by finding the body of the uterus of usual size, the cervix comparatively large and forming a very acute angle with the body. In these cases I have obtained excellent results, with the operation devised by Dr. E. C. Dudley, of Chicago. This consists in splitting the posterior lip down to the internal os and suturing the flaps so that their ends meet at the highest point of the incision. I have had ten cases, at least, in which sterility of several years' duration has been cured by this method. The secret of success with it lies in the ability to select the suitable cases. In cases of acute anteflexion with marked arrest of development, as outlined in the beginning of this paper, the operation cannot fail to be unsuccessful and to bring discredit upon the operator.

Of the other uterine conditions that may be the cause of primary sterility, endometritis of gonorrheal origin deserves more than a passing notice. Before discussing this form of endometritis, let me say that endometritis in the unmarried and the newly married may occur from other causes than gonorrheal infection. We need only to bear in mind how common it is to have affections of the mucous membrane of the genital tract as a complication in the acute infectious diseases of childhood. An endometritis so pronounced as to be a barrier to conception is readily recognized. In addition to the profuse leucorrheal discharge there is generally a large area of erosion surrounding the external os. The chronic inflammatory process may produce such changes in the appearance of the os as to mislead the inexperienced into the diagnosis of a laceration. As a rule a thorough curettage, together with a cauterization of the erosions and the maintenance of drainage for a week or longer, will effect a cure. In some cases where the growth of the new tissue is very marked it may be necessary to make in addition a circular excision of the area of erosions and suture the new os to the vaginal mucosa as in an amputation of the cervix.

We now come to the consideration of endometritis of gonorrheal origin as a cause of sterility. This form of endometritis as an etiological factor in barrenness, to my mind, has been and is given undue weight, a legacy which we still inherit from Noeggerath's famous dictum. We have only to bear in mind the frequency of blenorrhea in the new-born to be made fully aware of this exaggeration. For the gonorrhea in the genital tract of the mother, which infects the eyes of her infant, has not been acquired during pregnancy, but, as a rule, before conception has taken place.

It can be readily understood that there would be a barrier to conception during the first few weeks of the infection when there is profuse purulent discharge almost filling the entire uterine canal. But when the process has become chronic, the secretion scanty and frequently mucoid, and when, as it has been demonstrated, the gonococci are limited to small areas, the cause of the existing sterility must be sought elsewhere, and will usually be found in the changes that have been wrought in the tubes.

After due consideration and an impartial weighing of the evidence as presented by a thorough bimanual examination, it is thought that the gonorrheal processes in the cervical and corporal mucosa is the cause of the sterility; the same treatment is applicable as for endometritis in general. I would make this difference, however, that following the curettage I would apply a 20 per cent. solution of nitrate of silver freely to the whole uterine canal and would pack with iodoform gauze. It may be neecssary to repeat the nitrate of silver application several times to effect a cure. It need scarcely be added that the treatment is justifiable only when the disease has become chronic. Acute gonorreal endometritis must not be tampered with.

Fibromyomata are the only growths of the uterus as a cause of sterility that need concern us to-night. The other growths are too rare as an etiological factor to merit our discussion.

Fibroid growths of the uterus are an uncertain factor in causation, for conception may sometimes occur in a uterus that is studded with them; on the other hand, a single small growth may be so situated as to prove an impassable obstruction to the spermatozoa. A small growth situated in the cervix near the internal os may have a double action: (1) in presenting an obstruction, (2) in bringing about a retroflexion of the uterus.

Olshausen collected the statistics of 1731 cases of fibromyoma, in which 520, or 30 per cent., of the women were sterile. This percentage is generally considered as rather high. In those cases described first by von Recklinghausen as adenomyomas, sterility is the rule, as these growths occur chiefly, and, according to von Recklinghausen, only in undeveloped uteri. Some authors claim that the subserous variety is attended with a higher percentage of sterility than the other varieties. Schorler collected 253 cases, and found nine per cent. of sterility in the myomatous polypi, 18.7 per cent. in the cervical growths, 24.7 per cent. in the interstitial growths, 38.8 per cent. in the submucous variety, and 47.8 per cent. in the interstitial variety. Gusserow, on the other hand, states that most of the recorded cases of pregnancy in fibroids have occurred when the growth was subserous.

Fibromyomata may also be the cause of secondary sterility. The growths in these instances either have not developed until after the first or second pregnancy, or were so small as not to interfere either with conception or gestation. I have not had the time to look over my own cases in reference to these points. In a general way I know that though I have seen a large number of cases of fibroids of the uterus, I have seen but very few in which pregnancy was present at the time of observation. A great number of the cases were observed in women who had never been

pregnant, while there was a good percentage who had given birth to one or more children.

SECONDARY STERILITY.

The most frequent conditions of the uterus giving rise to secondary sterility are (1) chronic metritis, and (2) very deep lacerations of the cervix.

Chronic metritis.—A puerperal uterus that fails to undergo proper involution will after a time have an increase of its connective tissue, so that the organ later becomes more fibrous than muscular. A certain degree of endometritis usually attends chronic metritis; but in some cases the endometrium may be fairly healthy, in which case pregnancy may occur, only to be interrupted at any time between the fourth and twelfth week of gestation. In some cases the diseased uterus may battle with its contents for even a longer period, and the miscarriage not occur until the sixth month or later. The condition is easily diagnosed by finding a uterus double or treble the normal size, very hard in consistency and more or less sensitive to pressure. The woman, as a rule, complains of various nervous symptoms, and a prominent symptom is the sensation as if something is moving about in the abdomen. If chronic metritis is seen at an early stage, some benefit may be derived from the various therapeutic measures recommended, but in the advanced stage I know of no procedure that will afford any relief.

Laceration of the cervix.—In order that a laceration can be the cause of sterility it must be very deep, and usually extends beyond the vaginal junction. Such lacerations are generally unilateral and give the impression as if the tear had extended beyond the os internum and into the body. No doubt, many of these cases are instances of slight degrees of rupture of the uterus that have undergone a natural cure. Lesser degrees of tears, when they are bilateral and attended with marked eversion and hypertrophy of the lips, may be attended with sterility. Still it is surprising how readily conception, which may even end in a full term gestation, may occur in very severe degrees of laceration with more or less thickening of the lips. In the form of laceration first spoken of the repair needs to be done by an experienced and skilled hand in order to meet with success. In the second form with marked hypertrophy of the lips, the operation that will give the best results is a partial amputation.

Other conditions of the uterus giving rise to secondary sterility that require a passing notice are permanent hyperinvolution and atresia of the uterus, following a rough curettage during the puerperal period, or a too vigorous curettage with or without the application of a caustic to the endometrium at a non-puerperal period.

Permanent hyperinvolution of the uterus.—As I have previously pointed out on two occasions, normal involution results in so-called hyperinvolution, that is, if involution has progressed to the full physiological extent, the puerperal uterus is reduced to a size appreciably smaller than the normal parous organ. It may only be half the size of the normal uterus. As this degree of involution is favored by lactation and is rarely seen except when the woman nurses her baby, it is commonly known as lactation atrophy. It is a temporary condition coexistent, as a rule, with the period of lactation. But occasionally, indeed very rarely in my experience, from causes into which we need not now enter, the uterus remains in this condition of undersize and is unable to fulfil its functions of menstruation and gestation. We then have a pathological or permanent hyperinvolution of the uterus. The only treatment that can offer any success in these cases is that which partakes of prophylaxis. If a woman continues nursing her infant until the eighteenth month or longer, and the menses have not recurred, and on examination the uterus is found below the normal size, the child should be taken from the breast at once and the mother placed upon a tonic and building-up treatment.

Atresia of the uterus following too vigorous curettage has already been mentioned and does not call for extensive description. It may be added that amenorrhea and consequent sterility may follow such a curettage even without the production of atresia. The endometrium simply fails to regenerate, because the curette has scraped away the tissues too deeply, not leaving enough of the glandular structure to build up a new endometrium. This danger alone, apart from many others of even a more serious nature, should make the general practitioner very wary of curetting the puerperal uterus.

I am conscious that I have treated the subject at hand in only a very fragmentary manner, but if I have been able to throw out a few practical hints in the recognition and treatment of sterility due to the uterus, I shall be content.

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STERILITY FROM VAGINAL CAUSES.[1]

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A division of sterility in women into causes due to derangements of any particular parts of the system of generation we must at once recognize as arbitrary and impossible to establish, since such derangements grade insensibly from one part to another, the whole condition being sufficient to establish sterility while that existing in any one part alone might not do so.

A study of the subject in this way, however, has its advantages in that it concentrates the attention more upon details which might otherwise be lightly considered. The part which the vagina takes in the physiology of reproduction is that of the chief organ of copulation in the female. Its function is to produce an ejaculation of semen from the male and retain it in a healthy condition

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in such proximity to the cervix that it may readily find access to its canal. Therefore, we may say in a broad and general way that in so far as the vagina fails in the above-mentioned functions it tends toward producing a condition of sterility. It is surprising to observe how obstacles in the vagina pathological, artificial and congenital are overcome in the efforts of nature to reproduce the species.

Skene quotes a case where the vagina was the seat of a cyst as large as the foetal head and yet conception took place and delivery could only be accomplished by its puncture.

Hirst mentions a case of congenital atresia admitting only a small surgical probe, yet pregnancy occurred.

In the celebrated case of Louis, quoted by P. Müller and others, pregnancy took place by the rectum, the upper part of the vagina opening into it. This was the occasion for a papal bull, for this purpose issued by Pope Benedict XIV. permitting intercourse in that way. The author has seen a case of complete procidentia with consequent inversion of the vagina where impregnation occurred. Cases have been familiarly quoted where conception has occurred, though the hymen was unruptured, and of such a character that it could not possibly have admitted the male organ. Yet, notwithstanding these facts, our premise that anything which interferes with a normal condition of the canal of copulation tends toward sterility is true, and these cases are exceptions.

We will now consider more in detail the departures from the normal and for the sake of systematic study divide the subject in the following way, leaving out artificial interference: (1) Congenital causes; (2) pathological causes; (3) traumatic causes; (4) psychical causes.

1. CONGENITAL CAUSES.

Pseudo-Hermaphroditism.—This condition as a cause of sterility is of considerable importance from its comparative frequency. The author has seen two cases within the past year in which the determination of sex was most difficult. These cases have not had the attention which they deserve from the point of view of sterility. In them sterility is almost invariably the rule, and not only is the imperfection of development in the vagina but in the other organs of generation as well. These patients are usually the victims of well-meant but ill-judged interference on the part of their medical advisers.

It seems to the author that the advice in such cases, the diagnosis having been thoroughly established, should be prompt and firm. They should be informed of their unfitness for the marital relation, of the outlook for sterility and advised to seek some useful occupation and give up all thoughts of matrimony. I consider it unwise and unfair to tamper with these ill-developed organs, endeavoring, for instance, to convert the uncertain sex into a female by amputating the rudimentary penis and establishing an artificial vagina. Grant that the operation has been so far successful as to make a somewhat close approach to the female organs, is it not bitterly unfair to the other party to be joined by holy wedlock to such a being?

Congenital Absence of the Vagina.—The author has seen one such case. The patient was of a well-marked feminine type. Careful examination showed no trace of a canal, but the presence of a mass the size of a fetal head occupying the situation of the uterus. A diagnosis of retained menstrual fluid was made. Dr. Bache Emmet operated upon her at the Post-Graduate Hospital to make a vagina and release the fluid. No trace of a canal was found throughout and the mass proved to be a sarcomatous uterus with no retained menstrual fluid present.

Vaginal, Septa and Bands, Double Vagina.—These cases are common and occur as a result of the failure of development of the ducts of Müller, the two canals failing to a greater or less extent to coalesce into one. They are often accompanied by imperfectly developed uterus and tubes. They may cause imperfect sexual connection.

Congenital Atresia.—Such cases are comparatively rare, and it is not uncommon to find in them that the urethra has become dilated and that the sexual act takes place through it, thus diverting the semen into the bladder.

Unusual Passages Due to Congenital Malformations.—Cases have been authentically reported where the upper part of the vagina has opened into the rectum or bladder, an opening in the normal situation being absent.

Persistent Cloaca.—Roberts calls attention to a class of cases where the normal anus is absent and by imperfect growth downward of the perineal partition the rectum opens into the urogenital sinus, not the vagina, for the ducts of Müller have not grown downward to form its lower part.

Imperforate Hymen.—Such cases are rare, and if other organs are normal the attention will be drawn to the abnormality early in puberty by the disturbance due to retained menses.

2. PATHOLOGICAL CAUSES.

These being the most frequent, are necessarily the most important causes of sterility due to the vagina.

New Growths.—The vagina may be the seat of any kind of new growth, but only five varieties may be mentioned as occurring sufficiently often to demand consideration as related to this subject.

Carcinoma of the Cervix.—Cohnstein has investigated this subject, and while his statistics show that this condition has a decided tendency toward sterility, in a fair proportion of cases it does not prove a bar to conception. This subject will be touched upon again when considering the effect of abnormal discharges.

Sarcoma.—This may find its origin in the cervix or uterus and obstruct the vagina or may originate from the vagina, usually the anterior wall.

Vaginal Cysts.—These usually occur in the anterior wall, and may reach considerable size. They have their origin in this situation as a rule from the ducts of Gärtner.

Fibroids from the uterus or cervix occupying the vagina.

Syphilitic Growths. — These sometimes resemble malignant tumors so closely that a diagnosis may be made only by microscopical examination of a section of the tumor.

Inflammatory Conditions Resulting in Abnormal Secretions Inimical to the Life of Spermatozoa.—This we must believe is frequently the cause of sterility. The following facts in regard to the agents which effect the vitality of spermatozoa are of great importance and have been established by many experimenters. The normal semen is faintly alkaline in reaction. Vaginal secretion faintly acid and secretion from the cervix faintly alkaline. A faintly acid secretion stimulates the movements of spermatozoa. A pronounced acid at first stimulates and then causes them to permanently cease their movements. A faintly alkaline secretion favors the continued life of the cells, and a powerfully alkaline medium kills them. Thus we see that any marked departure from the normal reaction of the secretion from the cervix or vagina must tend toward sterility through destruction of the spermatozoa. They are also quickly killed by contact with water. Hence a profuse discharge of unusual reaction from endocervicitis, an irritating discharge from carcinoma of the cervix or vagina, or a vaginitis with profuse and acid discharge, must all have an important action in destroying the life or activity of spermatozoa with consequent induction of sterility. The same condition is also brought about by the presence of urine in the vagina.

3. TRAUMATIC CAUSES.

Among these causes vesicovaginal fistula is one of the most striking. We would expect sterility here from the presence of urine in the vagina, but the cessation of menstruation and ovulation in many of these patients during the existence of the fistula is a curious phenomenon. Destruction of the perineum seems to have but little influence. Also the presence of cystocele or rectocele. Complete procidentia, however, is usually accompanied by sterility, but child-bearing has been often observed under these conditions. Hirst has reported a case of traumatism, from copulation, resulting in a false opening into the rectum through which this act was continued. Such cases, however, must be extremely rare, and are only mentioned as possibilities.

Atresia of the vagina due to disease or trauma also occurs, and may be a bar to normal insemination. Injury or former disease of the vagina may set up a condition causing vaginismus which seriously interferes with cohabitation.

4. PSYCHOLOGICAL CAUSES.

Incompatibility seems to have been fairly demonstrated in a limited number of cases by good observers. Cases are quoted where, the marriage relation having been continued for a considerable length of time without progeny, each party having contracted a new alliance, has proved fertile. Under this head also may be included many cases of vaginismus where the distaste for the sexual act sets up a reflex contraction of the sphincter muscles of the vagina (the sphincter vagina and levator ani) of such violence as to prove an effectual bar to copulation.

TREATMENT.

In cases of congenital malformation of the vagina where the other organs are demonstrated to possess their normal functions our personal consideration for the subject of the deformity is such that we are justified in resorting to any reasonable surgical measure for correcting it, and in this we must realize that we are largely controlled by sentiment. In the breeding of any other animal except a human being we would be controlled by judgment and the imperfect specimens would not be used for this important purpose.

The treatment of pathological conditions must naturally have been suggested by the enumeration of the causes themselves. In the case of new growths they should be removed, but when of malignant character, conception should be guarded against. Where the growth is of syphilitic origin the use of the mixed treatment with mercurials and iodides will usually prove effective. Where the sterility is due to an excessive and acrid secretion of acid mucous, it may be relieved by the judicious use of antiseptics and local applications, among which the very best is nitrate of silver. The applications should be made in strength to meet the conditions usually varying from 20 to 40 grs. to the ounce. Several such applications may be necessary at intervals of about one week, in the meantime a cleansing and astringent douche of creolin, one dram to two quarts of water, and one teaspoonful of fluid extract of white oak bark, may be administered two or three times daily with the patient in the dorsal position. Excellent results also may be obtained with other antiseptics as potassium permanganate, bichloride of mercury, lysol, etc. Local applications of alcohol sometimes seem to have a very beneficial effect.

There are several new proprietary preparations of silver in use, none of which I believe to be as effective as the nitrate of silver of the Pharmacopœia.

The relief of sterility due to traumatic causes offers a wide field of usefulness, and to attempt a specific description would lead us into a field too broad for the scope of this paper, but operations for the relief of procidentia, cystocele, rectocele, lacerations and vesicovaginal fistula at once suggest themselves. Where sterility is really due to psychological causes the physician can offer practically no relief, the means for this lying with the individuals affected.

Finally, each case should be carefully studied

on its own merits, and the etiology thoroughly established; we should map out a definite plan and persist in this until relief is afforded.

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YOHIMBIN; ITS USE IN THE TREATMENT OF EYE, EAR, NOSE AND THROAT DISEASES.[1]

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YOHIMBIN is a new alkaloid derived from the yohimbehe tree, a native of West Africa. This drug crystallizes in the form of white needles, having a silky appearance. It is readily soluble in ethyl, methyl and amyl alcohol and in ether and chloroform, but is only soluble in water to the amount of about two per cent.

The hydrochlorate is the salt usually employed and is fairly stable except in solution when it deteriorates rapidly. Solutions over a week old cannot be relied upon. It may, however, be preserved much longer by the addition of a small amount of chloroform.

Yohimbin has been much praised as an aphrodisiac, though but little has been written about it as a local anesthetic. Various observers have proved that it is non-toxic when injected in doses of 25 c.c. of a one per cent. solution of the hydrochlorate. After its injection a local anesthesia is produced which lasts for 1¾ hours.

Magnani (*Annali di Ottalmologia,* XXII, Nos. 5 and 6, 322, 1903) has reported that it causes anesthesia of the cornea and conjunctiva when dropped into the conjunctival sac. In a later article (*Clinica Moderna,* No. 35) he states that it causes considerable smarting when freshly prepared, but that this smarting subsides with the onset of the anesthesia. Tactile sensibility of the conjunctivia is obtunded in one minute after the application of the solution of the drug, and in five minutes the cornea begins to lose its sensibility, being completely anesthetized at the end of ten minutes. In about half an hour sensibility begins to return and is completely regained in about an hour. Sometimes the pupil is contracted and sometimes dilated and the movements of the iris are sluggish. The drug has no effect on accommodation.

Very shortly after the solution of yohimbin is instilled into the eye hyperemia is observed which persists for several hours. It is not so marked in old solutions. As might be expected, chloroform, when added to the solution for preservative purposes, increases the smarting but does not interfere with its action.

Because of the hyperemia which it causes, Magnani suggests its use in chronic affections of the eye which require stimulation. He compares and prefers it to tropacocaine because its effect is longer and because it is non-poisonous. Cocaine affects the epithelium and impairs the nutrition of the cornea, causes mydriasis and hypotony, and is toxic; for these reasons a satisfactory substitute is desirable.

The experiments and conclusions of Dr. Claiborne to determine the field of usefulness of yohimbin in ophthalmic practice are as follows:

Two per cent. Solution of Yohimbin.—Right eye of Dr. J. H. Claiborne. 12.22. Two drops of yohimbin in right eye; slight stinging. Astringent feeling similar to cocaine; stinging; passed in two minutes. 12.24. Two drops; stinging slightly less; eye slightly red; stiff sensation similar to that produced by cocaine; no difference in size of pupil. 12.27. Distinct insensibility of cornea and conjunctiva; two more drops; stinging less than ever; no increase in palpebral fissure. 12.32. Insensibility slightly wearing off; eye quite red; slight fear of light. 12.37. Anesthesia very faint; eye red, uncomfortable; stiff feeling wearing off; no difference in pupil. 12.45. Anesthesia gone; redness still persists. 1.15. Redness still; eye comfortable.

From the above experiment, it will be seen that two drops of a two per cent. solution of yohimbin-spiegel introduced into the conjunctival sac of a normal eye, twice, at intervals of two minutes, will, in five minutes from the initial instillation, produce a corneal and conjunctival anesthesia which lasts about five minutes. It also produces redness, lacrimation and causes the stinging sensation and the stiff feeling characteristic of cocaine. No widening of the palpebral fissure was observable.

Two per cent. Solution of Yohimbin.—Right eye of James Buckley. 11.15. Three drops into right eye; redness, stinging, flow of tears. 11.17. Three drops; stinging less. 11.19. Scarcely any stinging. 11.21. Three drops, no stinging, tactile sensation, conjunctiva; perfect anesthesia of cornea. 11.23. Three drops, no stinging. 11.25. Three drops into conjunctiva; tactile sensation; cornea as before. 11.30. Cornea as above, apparently absolute anesthesia of conjunctiva. 11.40. Same as before. 11.45. Cornea as before; conjunctiva slightly sensitive, pupil slightly dilated, vision slightly blurred for far and near: tension normal. 11.50. Conjunctiva as before; cornea as before. 12 M. Cornea and conjunctiva as before; pupil normal; vision normal. 12.10. Sensation of cornea slight; conjunctiva distinctly sensitive, eye quite red. 12.30. Very faint sensibility of cornea. 1 P.M. Normal sensibility, slight redness.

From the above it will be seen that six instillations in ten minutes of a two per cent. solu-

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tion of yohimbin will produce an anesthesia of the cornea which persists as complete anesthesia for thirty-five minutes after the last instillations, and disappears completely only at the end of an hour and a half. The conjunctiva obviously becomes sensitive a short time before the cornea. The first instillation was made at 11.15, and the sixth and last one at 11.25. At 11.45, half an hour after the first instillation, there was a moderate dilation of the pupil and slight blurring of the vision for far and near. At the end of fifteen minutes, the pupil was normal. It was again observed that the cornea remained sensitive longer than the conjunctiva.

The idea of combining yohimbin and adrenalin chloride, to study the effect, presented itself. Accordingly equal parts of yohimbin in two per cent. solution and adrenalin chloride solution were mixed in a clean dish and the following experiment was made:

Mixture of Adrenalin and Yohimbin.—Left eye of James Buckley: 11.41. Three drops of above solution in left eye. Stinging about same as yohimbin alone. 11.43. Three drops; less stinging. 11.45. Three drops, scarcely any stinging; redness about the same as yohimbin alone. 11.46. Cornea insensible; conjunctiva slightly so. 11.47. Three drops. 11.49. Three drops. 11.51. Cornea absolutely insensible; slight sensation to touch on conjunctiva. 11.53. Three drops; no change in pupil. 11.55. Three drops. 12.01 (twenty minutes). Anesthesia of cornea complete; conjunctiva has slight tactile sensation. 12.03. Pupil commencing to dilate particularly for distance, less for near. 12.06. Corneal anesthesia, conjunctiva, tactile sensation, pupil still dilated, accommodation apparently unaffected, temperature normal. 12.11. Corneal anesthesia, conjunctiva, tactile sensation, pupil same, no apparent effect on the accommodation; eye as red as yohimbin alone. 12.16. Faint blurring of sight for distance and near; pupil quite large for distance, but reacts considerably for light and reading. 12.21. Corneal anesthesia complete; conjunctiva slightly painful, very red and suffused, but no worse than with yohimbin used alone. 12.26. Corneal anesthesia complete; conjunctiva slightly sensitive, pupil normal, accommodation normal. Tension normal. 12.31. Same condition. 12.36. Same. 12.41. Same. 12.46. Cornea slightly sensitive. 1.05. Sensation of cornea not yet perfect, considerable difference between two eyes. 1.22. Both corneas same. 2.15. Congestion gone.

Observe that six instillations were made in fifteen minutes. The complete corneal anesthesia persisted from 11.55 to 12.41, or about forty-five minutes; again, the conjunctiva regained its sensitiveness sooner than the cornea. The pupil commenced to dilate at 12.03, about five minutes after he last instillation, and persisted till about 12.26, having lasted about twenty minutes. There appeared to be a faint blurring both for far and near during the entire time. The redness caused by the instillations was quite as marked as by yohimbin alone, and at no time was there the faintest sign that the characteristic effect of adrenalin on the conjunctiva and eye-ball was present. The anesthesia of the cornea was profound, and the anesthesia of the conjunctiva while present was never so marked or startling as that of the cornea.

The writer has not used either yohimbin alone or in combination with adrenalin in any operation on the eye requiring local anesthesia.

The following conclusions are justified from the above study:

1. A two per cent. solution of yohimbin-spiegel, either alone, or in equal mixture with adrenalin chloride solution, dropped into the conjunctiva cul-de-sac from five to six times in ten or fifteen minutes, will produce both corneal and conjunctival anesthesia. Marked anesthesia of the cornea lasts from thirty to forty-five minutes after the last instillation; the conjunctival anesthesia is at no time so profound as the corneal, and disappears several minutes before the latter.

2. There is a slight stinging sensation immediately following the instillation which becomes less and less with each instillation, finally disappearing altogether.

3. The eye becomes immediately suffused and continues red for more than an hour after the last instillation.

4. There is no widening of the palpebral fissure.

5. There is a moderate but marked dilatation of the pupil which comes on several minutes earlier after the last instillation with adrenalin and yohimbin in combination than with yohimbin alone, but lasts in either case from fifteen to twenty minutes.

6. The slight blurring of the vision for far and near appears to be due to spherical aberration rather than to paresis of accommodation.

7. Yohimbin alone or in combination with adrenalin, is an exceedingly mild mydriatic.

8. Adrenalin when mixed in equal parts with yohimbin in two per cent. solution, loses its constricting power upon the blood vessels of the palpebral and bulbar conjunctiva.

9. This last-mentioned fact suggests the idea that yohimbin may be an antidote to adrenalin chloride.

10. In view of the congestion caused by yohimbin, it cannot be considered the ideal anesthetic for operations involving the conjunctiva or muscles.

11. As an anesthetic in cataract extractions and in iridectomy, it would probably be effective.

12. On account of the congestion produced by it, yohimbin would be inferior to cocaine as an anesthetic in all operations upon the eye.

Ear, Nose and Throat.—Haike (*Therapie der Gegenwart,* May, 1903) made use of yohimbin solution and found it useful in ear and nose work for the removal of the nasal turbinals and granulations, and of polypi from the ear, because of its freedom from toxicity and because it did not cause the tissues to contract (as cocaine does) and so render it difficult to remove them.

Before making use of yohimbin in operative work it seemed advisable to ascertain some of the peculiarities of the alkaloid, so some preliminary experimental work was done by Dr. Coburn as follows:

In general it may be said that a two per cent. solution of yohimbin appreciably benumbs the mucous membranes in two minutes, in five minutes they are markedly anesthetic and in ten minutes the maximum degree of anesthesia with this drug is obtained. Anesthesia lasts from one-half to three-quarters of an hour and then sensation, gradually returns, being completely restored in one hour and a half. As yohimbin does not act on cutaneous surfaces except by injection (directly affecting only mucous surfaces) it could only be applied in such cases where there was perforation or destruction of the membrana tympani or where there were granulations or polypi.

In the nose its application to the turbinals seemed at first to produce a temporary swelling with considerable hyperemia, after which there was some contraction of the tissues, though the redness persisted to the end of the experiments.

Applied to the tonsils, uvula, and pillars of the fauces there was little change noted except perhaps a slight flushing.

Salivation was quite marked at first followed by a sensation of dryness. There was no puckering or constricted feeling such as occurs after the use of cocaine in the mouth. The solution is only slightly bitter.

Mixed with equal parts of adrenalin chloride, one to 1,000, and applied to the turbinals, there was considerable contraction of the tissues, not so marked as with adrenalin alone but much more so than with the yohimbin solution alone. The characteristic blanching of the tissues peculiar to adrenalin was wanting, as was also (with the mixed solutions) the peculiar redness caused by the application of yohimbin alone.

Compared with cocaine, the pallor, anesthesia and contraction of the tissues were not nearly so pronounced.

For the examination of the nose, the determination of spurs and differentiation of hypertrophies from simple swellings it was not as effective as cocaine because the contraction caused by it was not so marked.

To anesthetize the nares for the introduction of the eustachian catheter it was sufficiently effective, but where hypertrophied turbinals were obstructive, cocaine was preferable. Nasal spurs and hypertrophied turbinals were removed during the anesthesia produced by it, but sensation was not so thoroughly obtunded as with cocaine while the immediate hemorrhage seemed unusually severe and lasted for some time. On this account some of the patients were rather frightened at the loss of blood.

Hemorrhage was not sufficiently severe to require plugging.

Secondary hemorrhage did not occur.

Cauterization of the tonsils to which yohimbin solution had been applied was rather painful.

Amputation of the uvula caused some pain and the oozing of blood was considerable for some time. A peritonsillar abcess was incised under cocaine anesthesia with considerable pain; a second opening on the following day was necessary and this was performed under yohimbin anesthesia with much less pain than the first time.

It is a well-known fact that cocaine does not readily or thoroughly anesthetize inflamed tissues, and it may be that yohimbin has not this peculiarity, but acts well on both normal and inflamed surfaces. This is a point requiring further testing.

REMARKS.

Before yohimbin is extensively used its effect on germ life should be determined: whether like cocaine fungi and germs can grow in its solution or whether like holocaine it is slightly antiseptic.

The question of sterilizing the solutions also arises because of its rapid deterioration in solution; boiling will probably hasten the process.

Because of the hyperemia which yohimbin causes its use in persons with hemorrhagic tendencies may be dangerous. Whether it produces hyperemia in distant organs or mucous membranes when injected also requires determination.

Cocaine occasionally causes sexual excitement; whether in view of its aphrodisiac power yohimbin will do this in the quantity and strength used, especially when employed in the mouth and throat, requires extended observation.

ADVANTAGES.

Non-toxic.
Long duration of anesthesia.
Does not markedly contract the tissues.
Taste only slightly bitter.
Does not cause unpleasant contraction of throat and mouth.

DISADVANTAGES.

Does not keep well.
Does not contract the tissues.
Hyperemia and hemorrhage after operation.
Salivation.

PROGNOSIS AND TREATMENT OF URETHRAL STRICTURE.[1]

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SURGERY differentiates itself from medicine by the act of man. Whereas the physician must usually wait upon nature and assist the patient to recovery by forestalling complications and strengthening him to overcome an inevitable foe, it is the privilege of the surgeon to open hostilities.

Such being the case, it is essential in debating the prognosis of a surgical disorder—and urethral stricture is essentially a surgical disorder—to deal intimately with its treatment. The two are inseparable. Proper treatment of stricture implies, in general, a good prognosis; improper treatment, a bad prognosis. Indeed, we may go

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even farther and state, with ample justification, that proper treatment of the causes of stricture will prevent its occurrence.

The causes of stricture are two: Gonorrhea and trauma. Let us begin by considering the prognosis as to stricture in these conditions.

The opinion prevails that stricture is usually caused by chronic gonorrhea. No doubt this opinion is founded on the fact that chronic gleet usually precedes and accompanies other symptoms of stricture. But closer observation reveals the fact that many cases of chronic gleet go on for years without producing stricture; while, in the other cases, the gleet is itself the first symptom of a gradually contracting stricture. After all, stricture is nothing more than a scar; and gonorrheal stricture is usually a dense and deep-seated scar founded, the pathologists tell us, on inflammation about the glands and follicles of the urethra. It is obvious that the intensity of this perifolliculitis depends on the intensity of the urethral inflammation against which it reacts. In other words, it is the acute stage of gonorrhea, with its blood, ardor and chordee, that lays the foundation for future stricture; and to prevent stricture we must modify the acute stage of the specific cause. This is one of the important advantages of the so-called abortive treatment of gonorrhea. I have employed this treatment for more than three years and have never known stricture to follow its use.

Traumatic stricture is attributable to two causes: Urethral instrumentation and perineal injury. Happily, the day of urethral brutality is almost past. The practice of "burning out a clap" with copious and concentrated silver nitrate, and of tearing the canal with metal instruments of all sizes and shapes, is no longer the ornament of modern surgery.

The sensitiveness of the urethra is respected more than it used to be; but be as gentle as we may, there is one condition in which the use of an instrument sometimes causes stricture. I refer to the constant passage of a catheter required by many cases of prostatic hypertrophy. Some of these patients acquire stricture in spite of every precaution; but, fortunately, this stricture is superficial and soft, readily yielding to dilatation.

Quite the opposite is traumatic stricture due to perineal injury. The patient falls astraddle the edge of a plank or some sharp object. Hemorrhage from the urethra, difficult urination, even complete retention, disclose the urethral injury, and stricture follows swift and sure—stricture of the most resilient, intractable type. Indeed, so dense is the scar that follows an almost trivial injury of this kind, that the only safe practice is to perform external urethrotomy in every case, be the symptoms of urethral rupture ever so mild, and to minimize or prevent dense scar formation by incising the contused canal and draining with a large perineal tube. Stricture will doubtless ensue, but it will be relatively benign and dilatable.

So much for prognosis before the fact. When stricture is actually present the immediate prognosis depends entirely upon its dilatability. If the passage about twice a week of conical sounds or bougies causes a gradual widening of the caliber of the urethra, so that at each session larger instruments will pass without the use of too much force, the prognosis is excellent; the patient appreciates the prompt subsidence of symptoms, and the surgeon recognizes the gradual absorption of the scar. But the stricture may be undilatable for one of four reasons: it may be resilient, irritable, impassable or complicated.

Resilient or unyielding strictures are those which do not yield to dilatation, which after each passage of a sound, recontract to their former tightness. Such strictures are common in the penile portion of the urethra. In this region we frequently meet a stricture that yields to dilatation up to a certain point, but beyond this is persistently resilient. This fact once established, internal urethrotomy is demanded. The urethra should be cut widely upon the roof; then the occasional passage of a sound will maintain the caliber of the canal.

In the deeper urethra resilient strictures are usually, perhaps, always, traumatic. Gonorrheal strictures of the bulbous portion of the canal—be they ever so dense—are doubtless always dilatable, unless the tissues have been damaged by brutal surgery or by periurethritis and urinary infiltration. Not so traumatic strictures: these involve the membranous urethra, and are often so dense and resilient that nothing short of perineal section and excision of all the scar tissue will effect a cure. In order to be radical such an operation may require the removal of an inch or more of the canal and the application of a skin graft to fill the gap; yet it is always wise to resort to operation at once rather than to temporize with resilient deep stricture, vainly hoping that it may become dilatable.

Irritable stricture does not resist dilatation, but resents it. Every passage of a sound, in extreme cases every kind of urethral application whatsoever, arouses acute inflammatory reaction in the form of urethral chill, acute prostatitis or swelled testicle. In face of such an explosion local treatment must stop, and when similar outbursts follow every attempt at dilatation, it is impossible to make headway. In order to overcome this difficulty two courses are open, the one, mild, slow and uncertain, the other radical, but relatively dangerous. If circumstances permit, the palliative course is to be elected. Local treatment is stopped and internal treatment pushed. Antiseptics, such as urotropin, salol and methylene blue; sedatives, such as liquor potassæ, tincture of hyoscyamus, codeine and the bromides; balsamics, such as sandalwood and wintergreen oil, with hot sitzbaths and, if necessary, suspension, guaiacol and poultices to the testicle, constitute the treatment: for the stricture irritability is not a quality of the stricture itself, but a manifestation of smouldering prostatitis, vesiculitis or

pyelonephritis, which inflammations must be controlled by the above-mentioned remedies before local treatment of the stricture can profitably proceed.

But such a course may fail to effect its object, or the retention or sepsis due to the stricture may be so grave as to threaten life. No alternative is then possible; external urethrotomy must be promptly done. The risk of operation under such circumstances is not small, especially since the emergency often arises in cases that are worn out by suffering and sepsis, fatty in heart, sclerotic in kidneys, utterly unfit for surgical shock. Whatever delay is permissible should be made use of to improve the patient's condition by milk diet, saline enemas and urotropin to the limit of tolerance, and the operation itself must be rapid perineal section with drainage by a large perineal tube. When relapsing epididymitis can be relieved by no other treatment, the vas deferens may be cut and tied. This prevents relapse, renders the testicle sterile, but affects neither the appearance of the gland, nor the potency of its possessor.

Impassable stricture, the third variety of undilatable stricture, is of purely negative interest. If actually impassable perineal section without a guide is our sole resort; but it is a great delight—albeit a tedious performance—to pit one's dexterity against the tightness, or rather the tortuosity, of such a stricture. Tight it certainly is; yet the reason why a filiform bougie sometimes fails to enter a channel from which urine will flow in measurable stream, is because the tortuous passage transmits fluid, but will not unbend to permit the entrance of a stiff instrument. Now the potent agencies to render a stricture impassable are congestion and spasm—this is exemplified by the occurrence of retention of urine from such causes as exposure to cold and overdrinking—hence the first effort to enter such a stricture must be, not a brutal and irritating prodding with bougies, but a systematic reduction of congestion and spasm. If the occasion permits, let the patient have a hot hip bath, an injection of morphine, even a course of balsamics and sedatives. Then begin operations by distending the anterior urethra with a solution of cocaine, 5 per cent., and adrenalin 1:5,000. Hold this in the canal five minutes, then inject sterilized olive oil; then to instruments. Filiform whalebone bougies, bent obliquely or bayonet-wise, are passed *secundum artem* very gently, until one engages and enters the bladder. The others are then withdrawn, and a small tunneled catheter passed if possible. Considerable force may be employed in this maneuver; for the instrument being guided can not make a false passage, and the benefit from ironing out the tortuous passage more than counterbalances the damage from well measured pressure.

Whether the tunneled instrument passes or not, it is safer to tie the filiform into the urethra for twenty-four or forty-eight hours, at the end of which time tunneled instruments up to 10 or 12 French may probably be passed and progressive dilatation instituted.

One other agent may be useful to overcome urethral spasm, viz., electricity. I have not known electricity to cure stricture or to cause the absorption of scar tissue; but, last year, one of the members of your society, Dr. Hickling, called my attention to the fact, which I have since seen demonstrated by Dr. Chetwood, that very mild electrical currents—five or ten milliampères—will sometimes (not always) relax very tight strictures that fail to respond to any other form of treatment. Such are the methods of avoiding operation in certain cases of tight stricture; methods brilliantly successful in certain instances, but neither practicable nor profitable in others.

The complications of stricture, such as stone, infiltration of urine, periurethral abscess, etc., modify the prognosis of the disease as well as its treatment; but let us pass these by and turn our attention to the more interesting subject of the remote prognosis of stricture. Suppose the patient refuses our treatment, what are his prospects? Or suppose we have successfully dilated or cut the stricture, will it remain well, or will it recur? Such are the questions one must be prepared to answer.

The location of the stricture makes all the difference. If it lies at or in front of the penoscrotal angle, the chances are that it will contract very slowly and will never become sufficiently tight to cause retention. Such a stricture is likely to be resilient and difficult to cure without urethrotomy; yet if once fully dilated, or cut and kept open by sounds for three or four months, a permanent cure may be confidently expected.

But strictures that lie deeper than the penoscrotal angle, strictures of the bulbous urethra and of the bulbomembranous junction, promise a far graver history. If neglected they cause retention with all its horrors, chronic hypertrophic cystitis, dilatation of the kidneys and ureters from back pressure of the urine, pyelonephritis, abscess of the kidney, of the prostate, peri-urethritis, infiltration of urine, epididymitis, and death by urinary septicemia (a combination of sepsis and uremia).

Such strictures if taken in time and dilated by sounds often resolve with marvelous rapidity, in marked contrast to the stubbornness of anterior strictures; but after dilatation the contrast is even greater; for no matter how smoothly the canal is ironed out, no matter how thorough the apparent cure of a stricture in the deeper portions of the urethra, it will almost inevitably relapse. Sooner or later gleet reappears, then dysuria, then retention. The interval of perfect health may be months; it is more likely to be years; but all the while stealthily and unsuspected recontraction progresses until five, ten, twenty years after the passage of the last sound, once again there is retention and the cycle is complete.

In estimating the quality of this utterly bad prognosis for stricture of the bulbous and the membranous urethra, three factors deserve con-

sideration, viz., the nature of the stricture, the thoroughness of dilatation and the duration of treatment.

The nature of the stricture, its density, its extent, its degree of contraction, its gonorrheal or traumatic origin:—all these factors bear upon the ultimate prognosis. The old, dense, tortuous stricture, involving inches of the urethral wall and admitting only a fine bougie, may be expected to recontract after treatment more rapidly and more viciously than a stricture of softer tissue, of larger caliber or of less extent. The difference is measurable in years. For example, traumatic stricture often contracts so tightly as to cause retention within a few months of the injury. Such a stricture fully dilated recontracts with equal speed and a few months more suffice to bring on renewed retention. Gonorrheal stricture moves more slowly. Indeed, the patient with gonorrheal stricture may go on for months, even for years, suffering repeated retentions, relieving these by hot sitzbaths or by an occasional poke with a very fine catheter, and successfully avoiding for an indefinite period any real relief by dilatation or operation. Such a plan of action is, of course, successful chiefly in deluding the patient. It only delays the surgeon—for it can not check the gradual progress of ascending renal infection—and it leads ultimately to perineal section under most unfavorable circumstances, or to death by urinary septicemia; perhaps to both. The struggle may be continued for five or ten years, though it may be shorter. Exceptionally, the very first retention causes infiltration and so requires immediate section.

The interval of relief that follows the dilatation of a stricture depends in part—as we have just seen—upon the nature of the stricture. If treated similarly, traumatic strictures recontract much more rapidly than less fibrous ones. But the element of sufficient dilatation enters very largely into the prognosis. If the stricture is sufficiently dilated, it will not recontract for months or years; if it is not sufficiently dilated, recontraction begins promptly.

What then is sufficient dilatation? This implies two things: (1) That the stricture shall be dilated so widely that it no longer grasps a full-sized sound. This, for an adult, varies from 27 to 32 French; (2) that it shall remain thus dilated for three months. In other words, after the stricture has been dilated to full size by the introduction of sounds at intervals of from three to ten days, the patient is dismissed for a month.

If the full-sized sound then passes readily, the interval is made two months, then three months; then, if all is well, the patient may be assured that his stricture is quite dilated. But he may be equally assured that, no matter how free from symptoms he is during this time, his stricture will surely recontract unless he passes a sound once in six months or once a year for an indefinite period. This course of after-treatment is the only possible assurance of safety. It may be that, after many years of such treatment, the tendency to recontraction will be finally and permanently conquered; but we lack certain assurance of this, and, therefore, are not justified in promising the patient that he will ever be free from the necessity of celebrating New Year's and the Fourth of July in thus calling up old memories.

Such, generally, speaking, is the prognosis of urethral stricture, often grave, always dependent upon proper surgical treatment.

THE SUBMERGED TONSIL.[1]

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The battle has waged long and furiously over the question of the enlarged tonsil and its proper treatment, until, at the end of many years, it can be confidently asserted that we all recognize the evils, present and future, of such growths and the necessity of some form of treatment.

No longer is heard, at least not openly, the assertion so common a quarter of a century ago—that they should be left alone as of no consequence and in time are outgrown by the child.

The writer has no intention of opening these old controversial sores anew, for he believes that they have been definitely healed. It is to a condition closely allied—both etiologically and pathologically—but which is far more liable to be overlooked that he desires to call your attention for a few minutes, *i.e., the submerged tonsil.* What do we mean by it? What symptoms does it or may it give rise to, and finally, what are the most appropriate methods of treatment, if any, to be employed in its correction?

The submerged tonsil is a term used by various writers to describe that form of faucial tonsil enlargement which is in whole or greater part hidden by occluding anterior pillars so that at first sight no excess of growth may be recognized.

The usual enlarged tonsil protruding in the median line is, according to most authorities, a *hypertrophy* or an *hyperplasia.* The hypertrophic form is non-inflammatory in origin and is made up in great part of an increase in the lymphatic element—the fibrous tissue not being conspicuous. The hyperplastic form, on the contrary, is the result of one or many previous tonsillar inflammations, and while there is an increase in all the histological elements, the fibrous reticulum is especially involved. It is this inflammatory hyperplastic form which is found in the submerged tonsil. There has occurred here, or will take place in time, a secondary sclerosis or atrophy. Indeed, the term should not be confined to the moderately enlarged tonsil hidden by the anterior pillar. The atrophy is often so pronounced as to reduce the size of the tonsil—well below normal—and yet give rise to a not insignificant group of symptoms.

[1] Read at the Annual Meeting of the Medical Society, State of New York, held in Albany, January 27, 1904.

Symptoms.—It is important to recognize their significance, for, unless attention is directed to them, they are liable to be overlooked.

Peritonsillar Abscess.—Of prime importance, is a tendency to repeated attacks of peritonsillar abscess. This is easily understood when the nature of these flat tonsils is once recognized. They show marked adhesive bands, closely connecting them with one or both pillars. Often the anterior pillar and the tonsil are so joined as to be virtually one. The tonsil itself contains deep crypts often filled with cheesy, decomposing material. What better soil could be desired for the breeding of germs! These work their way inward and proceed to grow in what is in effect a closed cavity, until in time the purulent product of inflammation forces its way to the surface.

Dr. F. C. Cobb, of Boston, in a recent paper before the American Laryngological, Rhinological and Otological Society, has gone extensively into the situation of these abscesses. As you may recall, the tonsil rests on the aponeurosis of the superior constrictor muscle. It is, however, surrounded by considerable loose areolar tissue. In the course of its development a three-cornered membrane from the anterior pillar appears extending from the velum down toward the tongue where the apex is attached—and backward to the posterior pillar. This encloses a space, at the third or fourth month of fetal life, which is later filled with lymphoid tissue—the tonsil. This membrane is the so-called plica triangularis of His. In the adult it is frequently found reflected over the tonsil. In such cases it is often possible to discover a small fossa above the tonsil formed by the plica—fossa supratonsillaris, which sometimes has the depth of 1½ C. This cavity has the disadvantage of possessing a very small mouth which is easily occluded by adhesive bands. It then becomes, in the event of the entrance of pernicious bacteria, a possible source of peritonsillar suppuration. This situation is, however, rare as compared with the areolar tissue, at the base of the tonsil. This, on account of its looseness and intimate connection with the tonsil, is most easily affected. It is also apparent how at the onset of pus formation, the tonsil will be pushed inward. The presence of the bands of adhesion will tend to prevent natural drainage and indeed to retain all unhealthy secretions. While it scarcely falls within the scope of this paper, the method of incision as advised by Cobb is worthy of mention. He argues, very sensibly, it appears to me, that the failure to locate the pus (as is so often the case in the classical incision made between the uvula and the wisdom tooth), is due to the fact that the depth of the tonsil is not taken into account and so is in reality punctured in place of the abscess.

The abscess is at the outer side of the tonsil and is separated only by a wall of mucous membrane. A probe or narrow bistoury accordingly, carried parallel to the axis of the tonsil and between it and the anterior or posterior pillar, as the case may be, on account of the anterior or posterior bulging, will enter the base of the abscess without difficulty and without risk of wounding any important blood vessels.

Of still more common occurrence are attacks of tonsillar inflammation non-suppurative in character. Indeed such tonsils are most liable to attacks of this nature. Aside from this tendency to quinsy and tonsillitis certain other symptoms are more or less constantly found in connection with the submerged tonsil.

Pain, the location of which is sometimes not definite, but described as in the throat, will often be an annoying and persistent symptom coming on in the form of sore throat. The patient is fond of describing himself as the victim of a "delicate throat." Examination may reveal a well-developed follicular condition on the posterior wall of the pharynx, which will engage your attention without avail as regards success in relieving the symptoms. Often, too, a constant collection of mucus in the larynx is complained of, with difficulty in using the voice, to the extent of even hoarseness or altered quality of tone for speaking or singing.

The Ear.—Occasionally, in the case of extensive adhesions, certain ear symptoms will be present, most common is earache. This is seen by us all in almost every severe case of tonsillitis, showing how close is the connection. The significance of the flat tonsil in catarrhal otitis is less clear. Formerly the writer was wont to disregard it. To-day, we believe it is a causal factor of no little value. If it is borne in mind that the attachment of the muscles known as the anterior and posterior pillars are in close relation to the pharyngeal mouth of the Eustachian tube, it will readily be seen how, in the case of great adhesion of these pillars to the tonsil, all normal movement is restricted or lost. Further, the pressure of the tonsil with its adhesive bands, on the adjacent blood vessels running to the nasopharynx and Eustachian tube must of necessity interfere with the proper blood supply of those parts. This alteration of function can scarcely fail to result in a chronic inflammation which is bound to extend itself sooner or later into the nasopharynx and thence to the Eustachian tube. Certainly, whatever is the true explanation, it is in our judgment a wise step to remove, not merely adenoid growth in the nasopharynx, but also to separate and remove a like condition in the fauces.

Cough.—Cough is at times a most annoying symptom. It is without expectoration, has possibly existed for months and defies all internal medication. There is often an associated dyspepsia, with coated tongue and inactive bowels, or in place of these more special symptoms, there may be only the complaint of a full and disagreeable sensation in the throat. Finally, before leaving this question of symptomatology, we would like to refer to the significance of the condition in children. In recent months, the proposition has forced itself more and more upon the writer that the average tonsillotomy is an incomplete opera-

tion. As physicians, we have been in the habit of removing any excess of tissue which is present and then desisting. The case passes out of our sight, but in after years returns or presents himself to some other physician, complaining of quinsy or some of the other symptoms just enumerated. Or, possibly, he develops a diphtheria. As a result, the lay or professional mind is led to the conclusion that the tonsillotomy was without value. What now is the true explanation? It is that the operator has removed only a part of the disease. He has left an abundant soil for further infection in the portion of the tonsil remaining hidden by the pillar. It is now the invariable rule of the writer to strive to remove the tonsil as thoroughly as possible, and, before all, to secure a separation of all adhesions.

Treatment.—Whatever may have been the sentiment of the profession a few years ago toward a laissez faire policy in the treatment of the enlarged tonsil, to-day we may confidently assert that such a course is never heard to be advocated in public. All laryngologists, at all events, are agreed as to the necessity of treatment of an active nature. Whatever is said in favor of such a course of treatment to ordinary tonsillar enlargements, applies with double weight to the submerged tonsil. The treatment is essentially surgical; all medication is of no avail. The surgical procedures are (1) a freeing of the adherent anterior pillar, and, if necessary, the posterior pillars; (2) the removal of the tonsil in whole or in part.

(1) The freeing or separation of the adherent pillar is an indispensable step in the operation. Without such preliminary release, any proper attack of the tonsil itself is impossible. In addition, wounding of the pillars is almost certain to give rise to troublesome hemorrhage and great subsequent pain. It will often be necessary, however, to cut loose the plica triangularis in order to free the gland.

Properly performed, the entire operation is scarcely at all painful. Our method is, after cleansing the tonsil and throat with a solution of Dobell, to paint both tonsils with a ten per cent. solution of cocaine. Usually, we operate on only one tonsil at a time, but occasionally we can complete the double operation in one sitting. The painting with cocaine, repeated several times for three minutes, is followed by the injection of 10 to 15 m. of one-half to one per cent. solution into the tonsil. On account of the numerous lacunæ a large part of the solution runs out. We have never seen any bad effects following its use. The employment of stronger solutions as four per cent., reported by one writer, is in my judgment dangerous and to be condemned.

The field prepared, the first and important step in the operation is now to be performed. For this purpose, Pynchon advises, as indeed he does for the entire operation, the use of cautery knives. With these I have had no experience, and so cannot speak with authority. For several years I have employed for slight adhesions the dull hook or separator of Pond, or for more extensive agglutination, the sickle-shaped knives of Leland. Care must be exercised in doing this, or in the case of an atrophied pillar the knife may buttonhole instead of cutting down. At times the released pillar can be drawn back with a fine tenaculum and the exposed tonsil removed en masse with a tonsillitome. Some surgeons find the snare, either cold or electrically heated, very applicable, and even the Volsella forceps and bistoury will at times be found suitable. With all these measures I have had little experience. Occasionally excellent results will be accomplished without any removal of tissue by merely opening up and thoroughly curetting the various diseased crypts. For this, ingeniously designed angular knives have been devised. My own preference is, however, for as complete a removal of the diseased tonsil as possible, and for this purpose I know no instrument equal to the tonsil punch. Various models have been suggested, but those of Myles seem best suited, especially the new right and left angular variety. The chief concern is to avoid cutting the tonsil pillar, the risk of doing which is greatly reduced with the new instrument. With the punch the danger of hemorrhage is avoided. The work can be done rapidly, five to ten minutes sufficing for the actual cutting. The subsequent reaction and soreness is surprisingly slight. The patient is sent home, with orders to remain indoors and gargle frequently with a hot saline solution. For the pain and discomfort I have found orthoform, in the form of an emulsion, or five-grain tablet works admirably. The other tonsil can be removed the following week.

117 East Fortieth Street.

PSEUDOBULBAR (GLOSSO-PHARYNGO-LABIAL) PARALYSES.[1]

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In 1872 Joffroy showed that the symptoms of bulbar paralysis could be present with anatomical changes demonstrable only in the cerebrum. In the same year Jolly reported a case with symptoms of bulbar paralysis and multiple sclerosis. On autopsy, foci of scleroses were found in the lenticular nucleus, but none were present in the pons and medulla.

Two additional cases were reported in 1877 by Lépine and von Barlow. Lépine first gave the name pseudo glosso-pharyngo-labial paralysis to this condition. After this in quick succession cases were published by Eisenlohr, Féré, Berger, Ross, Quincke and Oppenheim and Siemerling. The latter authors published five additional cases in 1886 and reviewed the literature. Since then cases have been described with various unusual phenomena by Goldscheider, Gaavielle, Barchard, Senator, von Leyden, Otto, Colman, Ritaman, Magnus, Kirchhoff, Bamberger, Wollenberg, König, Brauer, Ganghofner, Hartman,

[1] Presented before the Maryland Medical and Chirurgical Faculty, February 19, 1904.

Polenero, Perwuschin, Variot and Roy, Perritz, Bernhardt and Perrero. I have been unable to find any case reported from America.

The symptom complex of pseudobulbar paralysis is founded upon various disease processes. Slowly developing degenerations of the motor nerve nuclei in the floor of the fourth ventricle account for true or Duchenne's bulbar palsy. Atrophy of the anterior horn cells and sclerosis of the pyramidal tracts are the pathological findings which manifest themselves in an amyotrophic lateral sclerosis with progressive muscular atrophy.

A polioencephalitis with degenerations in the cortical nuclei may develop rapidly and even then go on to repair. It would therefore make the existence of disease in the medulla probable, and a subacute poliomyelitis of the cord less important. A disease of the medulla analogous to this is described as a pseudobulbar paralysis occurring in children (Eisenlohr and Berger).

Still another group of cases are those with independent disease of the bulbar nerves of peripheral origin, a bulbar neuritis.

Quite different from any of these just mentioned are the cases of acute apoplectic bulbar paralyses. Their pathological picture shows hemorrhagic foci in the bulb and especially the consequent softening. Effusions of blood into the pons are by no means unusual events, but owing to the sudden death which they cause, they rarely give rise to bulbar paralyses.

Arteriosclerosis is the most constant etiological factor of acute bulbar paralysis, a form quite as common as the luetic endarteritis. Disease of the vessel walls followed by thrombosis and softening of the tissues is the sequence. Rarely emboli are carried to the cerebral vessels in endocarditis. The vertebrals and basilar are those most commonly affected, and obliterated arterioles must be most carefully searched for. This is particularly true of the arterioles supplying the pons, medulla and neighboring nerves. A case of Schultze's showed miliary aneurisms of the arterioles. Griesinger's and Moeser's cases were similar. A pressure atrophy of the neighboring parts was also present, besides diseased foci in both hemispheres near the lenticular nuclei, internal and external capsules and corpus striatum.

Hemorrhages, apoplectic cysts, areas of softening and sclerosis, may be found, occasionally disposed symmetrically. The cases reported by Magnus and Kirchhoff, in which lesions were discovered only in one hemisphere of the brain and showing clinically distinct pseudobulbar symptoms are discredited by Oppenheim, who contends that if serial sections of the opposite hemisphere had been thoroughly examined under the microscope, lesions would have been demonstrable.

With regard to the differential diagnosis: True (or Duchenne's) progressive bulbar palsy usually develops gradually, with continuous muscular atrophy and shows marked electrical changes, with fibrillary tremors, paralyses of the adductor muscles of the larynx, and death within one to three years, the mind remaining clear to the end.

Speech defects may result from paralysis of the palatine velum after diphtheria but can always be differentiated. Confusion may arise from the benign form of polioencephalitis in children which resembles the bulbar paralysis. Atrophy, however, is always present.

Myasthenia gravis with asthenic bulbar paralysis resembles pseudobulbar-paralysis very closely. This disease tends to recover. It is really a neurosis with no anatomical foundation. The ocular muscles are usually involved. But the most important symptom is the rapid exhaustion of the affected muscles by the Faradic current, yet still reacting to the will.

Pseudobulbar paralysis, an example of which I desire to show you, is marked by the apoplectic onset, absence (or asymmetry) of atrophy hemiplegia, diplegia or paraplegia, are present. The disease is remittent in progress, exhibits normal electrical reaction, cerebral disturbances, dysphagia, aphasia, and at times trismus. The cerebrobulbar form shows marked arterio-sclerosis and many cases have a luetic history. Mental phenomena are always present. Facial paralysis, hemianopsia, lip, tongue and oscular muscle paralyses occur. The extremities are involved, involuntary laughing and crying occur. The palate reflex is often lost. Dyspnea, dysphagia and increased pulse rate are at times present. It develops quite definitely after two distinct hemiplegic attacks often months apart.

In their five cases, Oppenheim and Siemerling carefully studied the entire nervous system by the most improved methods. In addition to the changes in both hemispheres, they found minute diseased areas in the pons and medulla, which had entirely escaped their observation in gross examination.

The pathological findings are first and most frequently arteriosclerosis, especially of the basilar vessels, often accompanied by dilatations and aneurisms. Diseased foci are constantly present in both hemispheres, the internal capsule, corona radiata, basal ganglia and rarely in the cortex, especially over frontal and placental lobes.

Grossly the pons and medulla very rarely show any diseased areas. Microscopically, however, —Oppenheim and Siemerling were the first to point this out—with care and thoroughness in a search of serial sections, the pons and medulla will surely show somewhere areas of sclerosis or softening. These foci are circumscribed and most often found in the transverse fibers of the pons (except the secondary degenerations), in the pyramidal tracts, the lemniscus, in the neighborhood of the fibers of the facial, and at times in the floor of the fourth ventricle.

A critical review of all cases in the literature indicates that the great majority which were completely studied show these minute lesions in the bulbar centers and in the sclerotic basilar vessels. The cases which do not demonstrate such foci, were for the most part insufficiently investigated.

In Léjune's cases the lesions were confined to the pyramidal fibers. Aneurisms in the basilar and left vertebral were demonstrable in Berger's case and some flattening of the pons. In another, atheroma of the basilar vessels and a lesion the size of a cherry seed near the exit of the trigeminus was observed. Eisenlohr's and Ross' cases showed somewhat similar conditions. Ochs in his inaugural dissertation concludes an otherwise finely described case by saying "Microscopic study of a preparation of the medulla, hypoglossus, vagus and accessorious showed no signs of degeneration." Thus demonstrating the incompleteness of his work.

A great number of cases reported as acute bulbar paralysis, have besides the bulbar disease lesions in the cerebrum, and the conviction is reached that the mixed cerebrobulbar glossopharyngo-labial paralysis is an especially frequent form of bulbar paralysis of apoplectic origin.

In two cases reported, Oppenheim and Eisenlohr's, atrophy of the extremities occurred. In spite of this complication of muscular atrophy with contractures and paresis and acute bulbar symptoms, a confusion of the condition with amyotrophic lateral sclerosis was impossible. In Eisenlohr's case the muscular atrophy of the upper arm was directly traceable to a circumscribed lesion due to disease of a basilar vessel. Optic atrophy when present is a point against true bulbar paralysis.

An important difference between the acute forms is the absence of atrophy in the pure cerebral form. Occasional occurrence of psychic disturbances, aphasia, hemianopsia, all indicate this

Difficult respiration and various respiratory disturbances do not occur in the pure cerebral form.

One of the Oppenheim-Siemerling cases is of especial interest. It was one of apoplectic bulbar paralysis with acute onset, developing in the course of five years remissions and exacerbations. Besides the paralysis of the extremities with contractures and exaggerated reflexes on all sides, there were paralyses of the facial, hypoglossus, vagus, spinal accessory, and difficult respirations with high temperature at times. On section the left vertebral showed an aneurismal dilatation, which was so considerable that a corresponding impression myelitis was left in the pons and medulla. The microscopical investigation of serial section showed most of the lesions in the pyramidal fibers. From these the process continued through the raphé, destroyed parts of the olivary bodies and injured the hypoglossal nuclei.

REPORT OF CASE.

J. P., white, male, aged thirty-eight years; occupation, clerk; was admitted to my clinic at the Baltimore City Hospital January 20, 1903, complaining of "bad locomotion." His parents were dead; cause unknown. There were no nervous diseases, tuberculosis, alcoholism or cancer in his family as far as he knew. Personal history showed measles as the only disease of childhood. Had been very bright at school. Gonorrhea twice. Alcoholic history very definite. Three years before admission patient had a hard chancre, followed by general secondary symptoms such as eruption, alopecia and mucous patches. Present illness began with an apoplectic stroke one year before. There was no loss of consciousness. His arm and leg were paralyzed, from which he partially recovered. Last month a second apoplectic attack occurred with loss of consciousness. He remained in bed almost to the time of his appearance at the clinic. Since this attack, he has been unable to walk well, use his arms successfully or speak in his proper tone of voice. He expresses himself with difficulty and catches himself laughing without any reason for it. At times he cries, being entirely unable to control himself and with no grounds for it. His memory is bad and he has much difficulty in swallowing and breathing regularly. He has no frequency of micturition, no dribbling and no loss of control of bladder or rectal sphincters. Notices no odd sensations, no formication, girdle sensation or flushings. He has suffered no pains; sleeps well at night and has normal appetite. Has never noticed any diplopia except when intoxicated. Is not suspicious of his neighbors or surroundings, has no odd dreams, sees or bears no false images. Does not hear voices or see "things."

Physical examination shows a well-nourished, plethoric individual with a strange articulatory disturbance of the character of a bulbar speech. There is a strong, nasal, forced tone, evidently due to a paresis of the palate.

Partial paralysis of the seventh nerve is present. The soft palate is paralyzed, as is also the tongue. There is no atrophy and the muscles respond well to the faradic current. There is a chin clonus, and some weakness of the masseters. Ophthalmoscopic examination is negative for neuritis or atrophy. The pupils are irregular, the left more dilated than the right. Lateral nystagmus is present. The perimeter shows no limitation or contraction in the field of vision. Upon laryngoscopic examination there seems to be some sluggishness in the action of the adductors. Dyspnea is present and the patient occasionally indulges in uncalled for laughter. The superficial arteries show very slight hardening. The pulse is of good tension, regular and 90 to the minute. Test words and sentences elicit no loss of memory or elision of syllables. There is some apathy and deficiency of concentration. He is well-nourished and has what Dr. Osler calls a Bardolphian fascies (hyperemic). There is a diplegic condition of both arms and legs, with contractures of the flexors of the forearm and hand and double pes equino varus. The deep reflexes of the upper extremities and the lower are very markedly exaggerated with a supinator clonus in the right arm and a bilateral ankle clonus. Babinski's reflex is present on both sides. There are no demonstrable sensory phenomena. Hemoglobin 85 per cent., r.b.c. 4,300,000 and leucocytes 6,500. Secretions show nothing unusual.

THE RATIONAL VS. THE "REGULAR" TREATMENT FOR TYPHOID FEVER: HANNA'S CASE, AND SOME OTHERS.

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THERE was nothing peculiar in the case of Senator Hanna, either as to the treatment or the result of the treatment, since the case was managed according to the highest art of forced-feeding and drugging, and the outcome was the same as happens in about fifty thousand cases of typhoid fever in this country every year. It is estimated that about 300,000 cases of this disease occur yearly in this country. Of these, 50,000 are killed outright, and the balance, though surviving, are still so depleted in physical stamina that fully one-fourth of those who are said to recover finally die of consumption, as we are told by the life insurance statisticians, whose business it is to know about it.

It is proper for us to remark here that out of the 50,000 fatalities, about 15,000 of the patients *had a right to die!* That is, about five per cent. of all cases of typhoid fever are, from neglect or one or other cause, so deeply diseased that even the highest skill would not avail to save them. That this is a liberal estimate is shown by the following statement of fact, relating to the practice of Drs. Brand, Jürgensen and Vogel, of Stettin, Germany. These gentlemen, some years ago, gave the history of 1,223 cases of typhoid fever, from hospital and private practice, treated by the "Brand bath" method (after the method employed by the late Dr. Ernest Brand), with only twelve deaths, one per cent. And we learn, furthermore, that of these twelve deaths, *not one occurred in any case that came under treatment before the fifth day of illness!*

The treatment employed consists in placing the patient in a tub bath to the ears, the temperature of the water at about 66° F., every three hours or so, when his temperature reaches 103° F. A heavy cold compress is placed over his head before he enters the tub, and during all the time in the water brisk hand-rubbing is given by the attendant, the patient helping in this, if able. The bath lasts about fifteen minutes, and the patient is placed back in bed, dripping, between the sheets, and is well blanketed and given some degree of rubbing and squeezing through the bedcovers if needed to restore comfortable warmth.

Forced feeding is not practised; that is, the patients above referred to were not forced to take any nourishment unless they felt a desire for it. But strict therapeutic fasting was not employed; had it been, it is my firm belief that the illnesses would have been shorter, and possibly another life or two might have been saved. In some of the cases as many as 30 and 40 baths were given; whereas, in my own private practice, in which no food of any sort, except water, is ever allowed until the patient is safely convalescent, and actually hungry, I have never, even in the worst cases, found occasion for more than five or six of these full, cold baths; and I have never lost a single case that came early under treatment. In all ordinary cases coming under my care at the onset of typhoid symptoms, I seldom find the full bath demanded; moderate hydrotherapy, as the damp body-bandage, cold compresses, etc., proving all-sufficient.

Even in the full bath treatment to the extreme limit, there is nothing in the least frightful about it, except to the minds of those, in or out of the medical profession, who are unfamiliar with the method. Properly managed, it is even delightful, *on the average,* to the patient, in that, aside from the first shock of the cold, on being taken from his warm bed and placed in the bath, his comfort is promoted; the dry tongue becomes moist; the head symptoms (delirium or partial delirium, headache, etc.) are banished; the parched skin becomes moist; the heart and entire nervous system are favorably affected, and convalescence is shortly secured.

It should be distinctly understood, however, that neither the bath, nor any other water treatment, is ever employed by one who *understands his business,* for the purpose of "downing the temperature" of the patient; but, solely for its effect upon the heart, the nervous system and the skin. The high temperature is in all cases but one of the means employed, so to say, by the animal organism for the elimination of disease-producing matter; it declines and disappears altogether, and the temperature becomes normal in good time, when the all-round treatment is correct.

About twelve years ago, Mr. W. J. U., of St. Paul, Mich., had typhoid fever and was treated by the family doctor by the method employed in the Hanna case. He was critically sick for two months, and he was several months convalescing. When he had been sick two weeks, his little daughter, six years old, came down with the same disease. The doctor doubtless diagnosed the case correctly; but, when the question of treatment came up, the mother, who had been corresponding with me in the interest of the two children, telegraphed me the history of the case and asked me to wire full directions for treatment, which I immediately did.

The little patient's temperature was 104.5° F. With extreme trepidation on the part of both mother and daughter, the latter was placed in the bath, *à la Brand;* but the effects were so satisfactory that the child begged her mother for another a few hours later. She had four tubbings during the first twenty-four hours, and one on the day following; she wore the damp bandage for several days, as follows: two-ply coarse towel wrung tightly from ice-water, with two-ply, same, dry outside, snugly pinned about the body from armpits to hips, the damp folds freshened as often as they became at all hot; meaning, in general, at intervals varying from a half-hour to 2½ hours, as the disease abates.

In the case cited the disease was speedily aborted, and the child was dressed and on the

street, well, within two weeks from the onset of the attack. There was an exchange of ten telegraphic despatches in all, and four letters of directions. There was in this case a fast of six days; she had a small potion of moderately hot water from hour to hour and all the fresh water she desired. This is the true physiologic diet, doubtless, during the progress and duration of all fevers. Under the reverse management, there can be, according to my belief, such a thing as "feeding a patient into typhoid fever"; that is, patients that go through the regular siege of the disease, under the forced-feeding plan, have the alimentary tract so irritated and inflamed, and the system so poisoned from the absorption of putrescent food substances, that the prolonged illness and death, if there be a fatal termination, may safely be attributed to the treatment, rather than to the original disease.

It seems beyond belief that any physician could be found, at this time, who would deny a typhoid fever patient all the water he craved; but, in fact, such an occurrence is not altogether rare. Water is withheld in great measure upon the theory that "large amounts of fluid interfere with the digestion of other and more nutritious food"; but, as Henry has so tritely remarked, under certain conditions there is *no other food that can truly nourish the body*. During the progress and at the height of typhoid fever, as Dr. Henry remarks, "the blood is of a dark, blackish-red color, and is generally obtained by needle puncture of the finger with more than ordinary difficulty," indicating conclusively a deficiency of water. On the other hand, the thickly coated tongue, sordes, and the generally parched condition of the mouth, indicate quite as clearly the utter lack of all the dissolving and preserving juices absolutely essential to the digestion of solid food or any other food but water. To call milk a liquid food seems to me absurd, when it is stated on high authority that the casein of a pint of milk is equal to a good-sized mutton chop, and is vastly more difficult of digestion; yet we know that as much as two or three quarts of milk are swallowed by a typhoid patient in twenty-four hours.

The results of this abuse of food have been vividly portrayed by the late Dr. Jenner, as follows: Twenty years ago, Sir William Jenner, in an address before the Midland Medical Society of Birmingham, England, referring to the vicious effects of forced feeding, said: "I have seen the patient restless, sleepless, his temperature raised several degrees above what it had previously been, vomit, eject a quantity of curd, and at once the restlessness cease, the temperature fall, the skin become moist, and the patient drop into a quiet sleep. All the threatening symptoms vanish with the ejection of the offending material. Or the undigested curds may accumulate in the bowel, inducing flatulent distention, pain, restlessness, and increased febrile disturbance. Under these circumstances I have seen an enema bring away a large vesselful of offensive, sour, undigested, curds. Or, again, the undigested curds may themselves (and this has not been an uncommon consequence of milk diet in my experience) irritate the bowels, and produce, keep up, or greatly increase diarrhea."

Hippocrates was a wonderfully wise man, and one of the wisest things he ever said, as it seems to me, was that it is best to withhold food *during the progress* of all fevers; and therapeutic fasting has from his day to ours been the sheet-anchor of every expert sick-room dietist in all acute diseases.

One other wise dictum from the same source should be borne in mind, viz., that "physic is the hardest medicine for the system to withstand." The fasting patient will shortly have no movements of the bowels; there is a normal closure, so to say, under these conditions. After convalescence is fully established, the condition of the stomach such as to make the digestion of food possible, and the patient hungry enough to take a half-slice of stale Graham bread for "pie" and pronounce it delicious, this will be a good risk. Two or three times a day, after a day or two, he may have a moderate portion of such bread and, say a few stewed prunes; but the bread is to be chewed by itself, not run down with sauce, or any other fluid but saliva. After a few days of feeding, the bowels will get in condition for a natural movement, but they should never be moved with physic; though occasion may arise in which an enema of a few cupfuls of cold water may be of use in stimulating the action of the lower bowel; but this only in case of the presence of waste matters otherwise difficult to expel.

No end of fever patients have emaciated to skeletons during many weeks of forced feeding, and finally died, largely from inanition, when they would have been convalescent by abstaining, early in their illness, from all foods save water for periods varying from one to two weeks. Such patients at times emaciate much faster on feeding than on fasting; in the first instance they are being both *starved* and *poisoned*, there being absolutely no nourishment in putrefying food substances, while the ptomaines resulting from such putrescence are often as fatal as arsenic or other deadly poison. Many and many a time have I seen emaciation lessen, pain made to cease, all bad symptoms disappear, and strength rapidly return to the fasting patient.

I think that I am not making an overstatement when I say that if every patient beginning to be feverish, with lack of appetite, nausea, etc., were treated on the plan herein indicated, the three hundred thousand cases of typhoid fever occurring in this country every year would be reduced to perhaps fifty thousand, and, of these, forty-five thousand would be restored to health after comparatively "comfortable sicknesses." This would mean a saving every year of forty-five thousand lives, a value to the nation of at least forty-five million dollars, while the saving effected by the shortened sicknesses (to say nothing of the saving of vitality to the restored patients) would amount up to many more millions.

There is a lamentable lack of interest among medical men concerning all such studies as are embraced in this paper. The reason of this is not far to seek: the medical schools give their graduates almost nothing in the way of teaching in hydrotherapy, and it is the almost universal practice with their professors and the hospital physicians to feed early and often, as if the question of digestion and assimilation, and not simply swallowing, were not at the bottom of all true feeding. In the discussion following the reading of an essay on Hydrotherapy, Its Scientific Basis, by Professor Putnam, of Harvard University, recently, Dr. Coggeshall insisted that "it is disgraceful that students should be allowed to graduate from our medical colleges with practically no systematic teaching in regard to non-medical therapeutics," and Dr. Rogers remarked jocosely that "medical colleges ought to cease to graduate men who don't know the difference between a Scotch douche and a hot Scotch." Ku smaul writes: "Of hydrotherapy the young physician knows almost nothing. Here is a great gap in the education of our physicians; here is the real cause of their inability to cope with the empirics for the favors of the public." Professor Credé, of Leipzig, states that "if physicians were better versed in these branches, the field of operation of many quacks would be greatly curtailed," which is only another way of saying that many quacks are more efficient in practice than the average regular practitioner, an admission as true as it is shameful.

MEDICAL PROGRESS.

MEDICINE.

Blood in Anchylostomiasis.—As characteristic changes of the blood in anchylostomiasis, C. Honore (*Arch. internat. de Pharmacodyn.*, Vol. 12, fasc. 5 and 6) mentions an increase in the number of eosinophiles with the occasional presence of eosinophile or neutrophile myelocytes, or nucleated reds. The mononuclears and polynuclears undergo variations which are not in proportion to those of the eosinophiles. The percentage of the latter varied between 1.5 and 52. It could not be determined if their number depends upon the number of parasites, the age of the infection or other unknown factor.

Action of Roentgen Rays on Internal Organs.—If animals are exposed to the action of the X-rays, peculiar changes are found in the spleen. The pigment is excessively increased here, the follicles gradually disappear and the cellular elements of the splenic pulp undergo extensive rarefaction. The earliest of these changes, according to H. Heineke (*Münch. med. Woch.*, May 3, 1904) is the disappearance of the follicles; it can already be noticed several hours after exposure and ceases in twenty-four hours with small animals such as mice and rats. The nuclei of the lymphocytes in the follicles break up into fragments and are gradually removed by phagocytes. The same phenomenon may be observed in all lymph-nodes of the body, in the follicles of the intestines and in young animals also in the thymus. In the bone-marrow, the specific cells are destroyed and replaced by fatty tissue. With exception of a slight diminution in the number of leucocytes, the blood shows no change. When larger animals, such as dogs, were employed, the same lesions could be detected. An exposure of a quarter of an hour with a hard tube will suffice to bring about nuclear disintegration within a few hours. If the animals are killed after eight to fourteen days nothing pathological can be detected, which proves that regeneration is equally rapid. It is not at all impossible that the Roentgen rays may behave in a similar manner in man and that they may exercise a distinct therapeutic effect in pseudoleucemia, leucemia, lymphosarcoma and persistent thymus.

Value of Tuberculin Reaction.—That the tuberculin reaction is not infallible in the diagnosis of tuberculosis is clear, from the article of H. Smidt (*Münch. med. Woch.*, May 3, 1904). His technic is as follows: After absence of fever has been assured for several days by four hourly measurements, one mg. of tuberculin in fresh solution is injected, then, after four to five days, five times this amount. In eight cases with positive reaction, tuberculosis was found at autopsy in only five, in three, carcinoma of esophagus and stomach were the sole lesions. In one there was no reaction, yet evident tuberculosis. Despite such small doses and great care in injecting, serious accidents may occur and a latent process may suddenly become active and even lead to a rapid fatal issue. This happened to the author in three cases—one of leprosy combined with tuberculosis, one of incipient apical tuberculosis and one of affection of the serous membranes. A source of error is to be found in hysterical patients; they sometimes react after tuberculin injections and even after injections of plain water.

Chemical Detection of Digitalin.—Two tests are available to determine the presence of digitalin in organs, namely, the purple color developing when bromine is added to a solution in concentrated sulphuric acid and a green color if boiled with phosphomolybdic acid. C. Binz (*Arch. internat. de Pharmacodyn.*, Vol. 12, fasc. 5 and 6) has discovered, however, that a large number of other glucosides, alkaloids, etc., give exactly the same reaction, so that a serious error would be committed if too much reliance were to be placed upon these tests. The physiological test is thus indispensable, though certain alkaloids developing after death may influence the heart in the same way as digitalin.

Effects of the Roentgen and Radium Rays on Cell Division.—That these agents have a well-marked inhibitive effect on division in both animal and plant cells, is the claim made by G. Perthes (*Deutsche med. Woch.*, April 28, 1904). For the purposes of demonstration he selected the developing eggs of *Ascaris*, a round worm which is parasitic in the horse, and was able to show that the X-rays exerted a distinctly harmful effect, independently of whether or not nuclear division had begun. The effect does not appear at once, but comes on later as development proceeds, the latter being characterized by an irregular course and the production of abnormal end products. Analogous results were obtained when the radium rays were employed. Exposures of growing plant roots to the influence of both varieties of rays also disclosed a marked inhibitive action in their growth. The author suggests that the effects are in all probability due to the production in the living cell of substances which damage the chromatin in the nucleus.

Significance of Blood in the Feces.—An extensive series of observations were undertaken by G. Joachim (*Berl. klin. Woch.*, May 2, 1904) for the pur-

pose of determining the presence of blood in the feces in all conditions where a hemorrhage in any part of the gastro-intestinal tract might have been present. The guaiac and aloin tests were both employed. It was found that in all cases where the presence of blood in the stools could not have been explained, the tests were always negative. Even the presence of a slight epistaxis resulted in a positive test, which rarely occurred after a hemoptysis however, probably because in the latter case the sputum is not as a rule swallowed. Among malignant tumors of the alimentary tract, the tests were positive in every instance, the only exception being a carcinoma of the esophagus. The hemorrhage was regular but always weak. In contrast to this were the cases of gastric ulcer, where positive results were secured in over 80 per cent. of cases, but where the bleeding was more profuse and irregular, and at times was entirely absent from the stool. Other ulcerative processes showed a much less tendency to hemorrhage, in cases of tuberculous enteritis blood was never found in the stools. In typhoid it was possible, however, to detect slight bleeding by the tests before any gross evidences were present, and such a means of diagnosing premonitory hemorrhages may be of value. The tests were entirely negative in all the ordinary gastric catarrhs, in gastroptoses, and in all processes immediately surrounding the intestinal tract, appendicitis, subphrenic abscess, etc. Where there was marked venous congestion present, as in cardiac disease with disturbances of compensation, blood could be repeatedly demonstrated in the stools, which disappeared as soon as the congestion was relieved. In catarrhal jaundice, the tests were positive, but in cases of cholelithiasis, they were always negative. The presence of blood could always be demonstrated in cases of secondary carcinoma of the liver. Although these tests have undoubted clinical value, their diagnostic value is not so evident on account of the large number of diseases in which intestinal hemorrhages can be demonstrated. The knowledge gained may be of value, however, in tracing the progress of a disease, such as gastric ulcer, and also in this manner judging the effect of the various schemes of treatment. To avoid the possibility of error, the author recommends that both tests be employed, one being a control on the other. Other factors to be borne in mind as invalidating the final results, are the possibility of an admixture of menstrual blood or that derived from hemorrhoids, bleeding gums or nose, and swallowed blood-stained sputum. In addition the tests have resulted positive when the patient had eaten food containing blood, such as raw meat.

Hematuria in Barlow's Disease.—Attention is called to the fact that à hematuria may be the only evident symptom of scurvy, by E. Neter (*Deutsche med. Woch.*, May 5, 1904). He reports a typical case in an eight-months-old infant, well developed, and fed during the previous four months exclusively with malted foods. The child did not seem quite well, but nothing was found on examination except the presence of blood in the urine. The diagnosis of scurvy was made by exclusion, and within eight days after changing the food to raw milk, the child was cured and no further blood could be detected in the urine. When hematuria appears during the end of the first year or later, and any affection of the bladder or the kidney can be excluded, the presence of scurvy should always be suspected. In doubtful cases, antiscorbutic treatment will soon afford a definite conclusion.

Effects of Facial Anomalies.—In addition to the known anomalies in different parts of the body which may exhibit a tendency to be far reaching in their effects, V. Babes (*Berl. klin. Woch.*, May 2, 1904) describes a class of cases where a primary, deep-seated anomaly of the face, and especially of the base of the skull, may lead to marked changes in the four extremities. He has had an opportunity of observing a series of such cases where the cranial anomalies were principally marked by early ossification and sclerosis of the base of the skull. The changes in the extremities usually affect all four, although the upper ones are often most marked. They may be manifested in three ways, (1) by the absence of a toe or a finger, or as general shortening of the limb; (2) by an increase in the number of fingers or toes, or a general increase in the size of the limbs; (3) by a change which includes a partial excess and defect, such as an increase in the number of metatarsal bones, with amalgamation of either fingers or toes, and increase or decrease in the length of the extremities. A remarkable fact about these phenomena is the symmetrical arrangement of these deformities as well as their resemblance to certain animal groups, the arthrodactylates, perissodactylates or the bidactylates. He details a number of cases to illustrate these observations and believes that there is a region of the skull which stands in close relation to the development of the extremities. In other words, that a center must be assumed to be in this region which determines the normal development of the extremities and any change in shape or character of the former will have as result an abnormal growth of the limbs. A further knowledge of this process may aid in clearing up some of the mysterious factors which underlie the differentiation of the various races and classes of animals.

A Rare Human Parasite.—Some three and a half years ago it was reported that a parasite found in cats and dogs in several countries of Europe and also in Siberia, had in two instances occurred in the human body. This parasite is the *Distomum felineum*. M. Askanazy (*Deutsche med. Woch.*, May 5, 1904) who first reported the disease in man has now made some further studies on its pathology. One of the cases in question had been diagnosed as tumor of the liver together with occlusion of the inferior cava. At autopsy there was found an extensive carcinoma of the liver, with numerous distoma and their eggs in the biliary passages. The same were also found in another man who had an ischias. The author has studied the possible relation of the parasite to the occurrence of the carcinoma in these cases and also the paths of infection. On investigating the stools of a number of patients suffering from the presence of tapeworm, for this parasite had also been found in the other two cases, the *Distomum felineum* was present in five. All these patients lived in a sea-port city. The fact that carcinoma of the biliary passages was also determined in a number of other cases, where the parasite was at the same time present, leads the author to believe that the epithelial proliferation due to their presence may possibly form a predisposing cause for the production of the cancer. Efforts to find the source of the infection resulted in the discovery that cats and dogs fed with raw fish, mainly the roach (*Leuciscus rutilus*), became infected with the parasite. This evidently accounts for the rather extensive distribution of the parasite in cats in sea-port towns. It is finally to be noted that one of the patients stated that he had been accustomed to eating raw fish.

Further experiments are now in progress in order to determine whether it is possible to produce cancerous growths in dogs by feeding them the infected fish. The intermediate form of the parasite has not yet been demonstrated and the complete cycle of development has therefore not been fully worked out.

Action of Formalin upon Urine.—Since formalin is being used more and more to preserve urine, it is interesting to study its action upon the chief chemical ingredients. C. STRZYZOWSKI (*Therap. Monatshefte,* May, 1904) reports as follows: Urea combines with formalin, forming a leucin-like sediment. This reaction may be used as test for urea; it is hastened by the addition of hydrochloric acid. Uric acid also combines, so that if precipitated, it will redissolve. Creatin and creatinin are not altered and the usual reactions are not interfered with. The same holds true for urobilin. With indican, however, 0.2 per cent. of formalin will render the ordinary reactions faint, and with one per cent. it will be absent altogether. The behavior toward albumin varies; sometimes traces are no longer precipitated on boiling preserved urine. The influence upon sugar, pentose, glycuronic acid, acetone, diacetic acid and oxybutyric acid is very slight, while bile-principles may be precipitated with the urea, from which they can be dissolved out by means of acid alcohol. Pettenkoffer's reaction is no longer possible in the presence of formalin. Summing up his observations, the author concludes that formalin is not suited for preserving urine, since it interferes with many important reactions.

Hemoglobin in Chronic Heart Disease.—Most cases of chronic endocarditis suffer from anemia and iron can often be taken for months without improvement. A. SCHOTT (*Münch. med. Woch.,* May 10, 1904) has often been surprised by the change of appearance of patients at Nauheim. A series of hemoglobin estimations show that with the customary physical and dietetic measures the blood improves markedly even where iron is withheld. As the figures approach normal, the symptoms disappear and the color returns.

Hemoglobin Estimation of Blood.—In contrasting the hemoglobin estimation of the blood with the Fleische apparatus with the actual determination of iron with the ferrometer, J. MITULESCU (*Zeitsch. f. klin. Med.,* Vol. 52, Nos. 3 and 4) finds that both figures agree very accurately unless the color of the blood is changed as in icterus or leucemia, or the blood is considerably altered so that the serum contains a considerable amount of iron owing to disintegration of red cells. In the latter class of cases, the percentage of iron of hemoglobin are not identical and both estimations are necessary.

Quantitative Determination of Pepsin.—J. A. GROBER (*Arch. f. exp. Path. u. Pharmak.,* Vol. 51, Nos. 2 and 3) has previously discovered that the pepsin normally present in every urine can be easily removed by digesting the urine with flakes of fibrin. The pepsin adheres very firmly to the latter and can only be washed off by dilute solutions of hydrochloric acid. It is probable that pepsin in the presence of acid forms a definite chemical compound with the latter for the critical temperature, that is, the temperature at which pepsin ceases to digest albumin is higher than with pure pepsin. A solution of acid, standardized against alkali with Congo-red, will possess a higher titre than the same solution in the presence of pepsin since pepsin shares the property of all proteids of neutralizing acid. In order to determine the amount of pepsin in a solution, a simple titration with standard acid solution will be sufficient.

Myxedema.—All cases of adult myxedema observed by A. MAGNUS-LEVY (*Zeitsch. f. klin. Med.,* Vol. 52, Nos. 3 and 4) came from regions where goiter is not endemic and some previous infection, such as erysipelas or influenza seemed to be the cause, or at least to stimulate the latent process. Tuberculosis certainly plays a minor rôle, if any at all. The most intense swelling affects head and face, and the rest of the body may be free except that the skin is usually dry and cold. In some the thyroid is enlarged and hard, in others it is absent altogether. Other common symptoms are cardiac changes, loss of sexual function, tremor, hippopotamus-like gait, loss of memory, apathy and depression. Complete idiocy is infrequent and very severe cases may present normal intelligence. Most cases were cured or very much benefited by thyroid medication. Sporadic cretinism also occurs in regions free from goiter and the disease generally dates back to the first years of life. The etiology is equally obscure; the symptoms correspond with those of adult myxedema, and treatment is generally successful. Endemic cretinism is more refractory toward treatment only if the diseased habitus has been transmitted through several generations. The first favorable symptoms which manifest themselves when thyroid is given, are a moderate perspiration and a sensation of warmth over the body soon followed by disappearance of constipation and changed voice. Equally good results were obtained with tablets, thyreoglobulin and iodothyrin, but thyreoantitoxin, iodide of potash and hypophysis tablets had no effect. It is often advisable to combine the treatment with baths, quinine, iron, arsenic and milk with vegetable diet. A large number of experiments conducted upon the patients showed that the respiratory exchange of gases is very much reduced owing to the diminished vital energy of the tissues, but it improves steadily with thyroid medication.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Multiple Arterial Thrombi.—Sometimes occlusion of large vessels and sudden death occur in patients suffering from a lesion of the mitral valve and a diagnosis of embolism is generally made. H. EICHHORST (*Deutsch. Arch. f. klin. Med.,* Vol. 80, Nos. 1 and 2) is, however, inclined to view the process as thrombotic in nature, since the large masses found on the vessels are often altogether out of proportion to the small, delicate excrescences upon the diseased valves. Even if thrombi are present in the left auricle, their smooth surface argues against the possibility of an embolism. In a case observed recently the abdominal aorta from 12 cm. above the bifurcation, together with the left and right femorals, the superior mesenteric, the left renal, splenic, right pulmonary, left inferior thyroid and left carotid were found filled with clot. The immediate cause of death was occlusion of the mesenteric artery, and though the patient died half an hour after the accident and autopsy was performed only four hours after death, the intestines were already the seat of a hemorrhagic infarction and a peritonitis was beginning to develop. To decide the question of thrombosis or embolism, the walls of the affected vessels were examined microscopically. An intense inflammation was discovered here, probably set up by bacteria entering the vasa vasorum, incident to the recurring endocarditis. It is thus not difficult to understand that a thrombosis

may set in as suddenly and with the same symptoms as an embolism. The number of vessels occluded is frequently surprising and often the patients present but few symptoms.

Action of Fluorescing Substances on Toxins.—If diphtheria toxin is mixed with eosin or some other photodynamic dye, and then exposed to sunlight, many times the fatal amount may be injected with impunity. H. v. TAPPEINER and A. JODLBAUER (*Münch. med. Woch.*, April 26, 1904) injected diphtheria toxin into guinea-pigs after the animals had received a small dose of eosin or methylene blue for a few hours before. The site of injection was then exposed to the sunlight. The animals remained alive three times as many days as control animals after three to four times the fatal dose. The same holds true for tetanus toxin. The possibility of treating diphtheria and tetanus in man with these substances is seriously considered and snake poison would probably be influenced in the same way. There may be some advantage in choosing from the group such substances which have a special affinity for the tissues affected such as methylene blue in tetanus, where the nerve-tracts are principally involved.

Primary Endothelioma of Pleura.—One of the most interesting of tumors is the pleural endothelioma, since many questions concerning its origin and character are yet undecided. B. BONHEIM (*Münch. med. Woch.*, April 26, 1904) is of the opinion that the growth may start both from the lymphatic and pleural endothelium, since both classes of cells are of the same type and origin. Pathologically, two forms of tumor may be recognized: In one the pleura is uniformly thickened, so that the condition may be difficult to distinguish from callous pleuritis; in the other the pleura is studded with small nodules, suggestive of acuminated condylomata. The diagnosis is often difficult, but the following points are of importance: The exudate is generally upon the left side and serous in character at first. After every subsequent puncture, however, it becomes more hemorrhagic and finally has a dark chocolate color or suggests pure venous blood. Later punctures yield less and less blood and finally the heart will no longer return to its normal position. Very late in the course it may be necessary to puncture every few days. Microscopical examination of the fluid shows absence of tubercle bacilli and often groups of vacuolated tumor-cells. Despite the fact that the circumference of the thorax on the affected side is much increased, the ribs will approach each other, owing to pleural shrinkage. Other symptoms are gradually increasing scoliosis, severe pains and dyspnea. Frequently a resection of the ribs will considerably alleviate the patient's suffering, though it will hardly postpone the fatal issue.

Origin of Basophile Granules.—At present there is still considerable doubt as to the origin of basophile granules formed in red blood cells, some believing they are remnants of nuclei, while others believe them to be a peculiar form of degeneration. O. BOELLKE (*Virchow's Archiv*, Vol. 176, No. 1) has studied the blood in 43 cases of posthemorrhagic anemia and has found marked increase of polychromatophile erythrocytes with leucocytosis, but never megaloblasts or basophile granules. The same results were obtained after bleeding animals. Granules were also looked for in vain in embryos and in the newly-born, hence it is exceedingly improbable that they are derived from nuclei or stand in any relation to regeneration. Where the nemorrhage took place into the gastro-intestinal tract, an occasional punctate cell was found after some time, probably because the decomposition of bleed in the intestines led to the absorption of toxins. To prove that this can happen it is only necessary to administer some artificial blood-preparation, when the same granulations can usually be detected. There are especially common in pernicious anemia and there is every reason to believe that this disease depends upon an intestinal auto-intoxication, for the granules will disappear and the patients improve visibly if stomach and intestines are irrigated regularly, and if vegetable food, hydrochloric and citric acids are given. Another proof that stippling has nothing to do with disintegration of nuclei, is found in the behavior of blood toward pyronin and methyl green; all nuclei and their remnants will appear bluish-green, while the granules take on a bright red hue. It is also questionable if polychromatophilia has anything to do with karyolysis; probably it is merely a manifestation of protoplasmotic degeneration.

Nature of Symmetrical Disease of Lacrimal and Salivary Glands.—The microscopical examination of the glands of a case of symmetrical swelling excluded simple hypertrophy and led M. WALLENFANG (*Virchow's Archiv*, Vol. 176, No. 1) to group the conditions among pseudoleukemias. Why the toxins, which no doubt are the underlying cause, should select an isolated group of structures, could not be determined, but an affinity for certain tissues is a peculiarity which is noticed with many other poisons. The swellings are certainly not due to microorganisms, for no bacteria could be detected in the tissues with the usual stains.

Relation Between Acromegaly and Tumors of the Hypophysis.—In one case of pituitary tumor without signs of acromegaly examined by G. CAGNETTO (*Virchow's Archiv*, Vol. 176, No. 1), the tumor had destroyed the tuber cinereum and the corpora mammillaria and has penetrated into the lateral walls of the third ventricle. The tumor was a polymorphous telangiectatic sarcoma which had taken its origin from the anterior portion of the organ; its posterior portion was found compressed into a narrow strip of gland tissue along the floor of the sella turcica. In a second case, the typical skeletal and visceral changes were pronounced; the tumor, a hyperplastic struma with advanced adenocarcinomatous degeneration, had destroyed part of the sphenoid bone and had formed metastases along the spinal cord. The first case proves that the hypophysis may be the seat of a large tumor without acromegaly; the second argues in favor of the theory that acromegaly is a disturbance of metabolism which stimulates the bones of the skull and of the extremities to increased growth and sometimes the hypophysis to active hyperplasia.

Elastic Tissue in Tumors.—According to B. FISCHER (*Virchow's Archiv*, Vol. 176, No. 1) it is a mistake to believe that elastic tissue never participates in tumor formation. The great majority of benign and malignant growths contain but little elastin; in fact they show a decided tendency to destroy the fibers of the surrounding tissues by pressure and disintegration. Yet in others there is so much that the name "elastoma" would not be inappropriate. Among these are cavernous growths of the skin, certain cancers of the breast, endotheliomata of the dura, many fibroids and sarcomata. Occasionally the elastic tissue is not present in the form of fibers but as granules. Mixed tumors of the parotid and testes also give the reaction frequently. Often it is difficult to distinguish mucin and cartilage from elastin but Weigert's stain, if followed by prolonged differentiation in absolute alcohol, is specific.

PEDIATRICS.

Scurvy from Humanized Milk.—Municipal milk depots unquestionably do a great deal of good, but with the approach of summer, attention should be called to the fact that not only American observers in considerable numbers but those of Europe as well have recently

begun to recognize that there is an element not strictly human in the unlimited production and too free distribution of this so-called humanized food. Henry Ashby (*Brit. Med. Jour.*, Feb. 27, 1904) states that conditions which may well be called parascorbutic, but which are not sufficiently advanced to give the actual bone degenerations seen in scurvy, are apparent on careful observation in all children's hospitals where this form of feeding is employed in a proportion of about 6 to 1. There is anemia, anorexia, diarrhea, hematuria and sometimes a zone of pinkness at the roots of the finger nails. It costs the municipality a good deal of money to produce this humanized milk, because the rates at which the artisan class can afford to pay for it in England at any rate, does not begin to cover its cost. It is, therefore, of very great importance to know whether or not this well-meant effort is producing men and women of bone and brawn.

Lymphosarcoma of the Mesenteric Glands in a Three-year-old Girl.—This was the case of a child who was brought to the hospital with an enlarged abdomen which on palpation proved to be the seat of a soft swelling located in the right pelvis. Kovolkoff (*Roussky Vrach*, No. 10, 1904) elicited a history of trauma to the right side of the abdomen which was followed by hardening at the site of same. The child was rather pale, although fairly well nourished, with an occasional hectic flush due to variations of temperature. The circumference of the abdomen was 61 cm., and this kept on increasing until it reached 68.5 cm. in ten days; during this time the child's weight also increased five pounds. The heart as well as the lungs, though normal, were pushed upward so that the upper border of cardiac dulness was elicited at the third rib, and the lower border of the lungs was pushed up one rib higher. Every movement was accompanied by considerable dypsnea; respirations between 26 and 40 per minute; pulse 120. In view of the rapid growth of the tumor an abdominal section was performed and a bleeding tumor was found which was attached to the peritoneum. As it was impossible to extirpate the growth the abdominal wound was closed, and the patient was left to her fate. Her condition grew steadily worse, the body-weight kept increasing, although it fell soon before the fatal issue. There was severe dyspnea, edema of the extremities and stupor. On autopsy the tumor was found microscopically to be a lymphosarcoma, consisting of the same small cells as lymphatic tissue; the matrix of the growth could not be distinctly made out because of the great number of the cellular elements.

Postdiphtheritic Paralysis.—Notwithstanding the value of the diphtheritic antitoxin the various complications and consequences attendant upon the disease have not been greatly diminished by the use of it. The postdiphtheritic paralyses do not at all depend on the severity of the disease and are to be seen in grave as well as in comparatively light cases. N. F. Dourbrovsky (*Prakt. Vrach*, No. 9, 1904) describes two cases in boys ten and three years old respectively, in one of whom he found a typical paralysis of accommodation in both eyes as well as paralysis of the soft palate. This boy was treated with antitoxin (diphtheria) one and a half months before; the younger child suffered from strabismus and poor sight of the right eye. The older boy had a very severe attack of diphtheria. The pupils did not respond to light, the right is somewhat larger than the left; there is also some nystagmus in the right eye. There are no signs of anesthesia or paresthesia; the facial nerve is intact. The nasal voice and the ejection of food through the nose pointed to paralysis of the palate. According to the parents the disease was not accompanied by edema or any other symptoms that would point to premia. The strabismus appeared in the younger child suddenly, over night, accompanied by pain in the eye. It is so strongly convergent that the eye is turned entirely toward the nose. As regards treatment, the older boy was prohibited all school work and directed to wear dark glasses in view of the pronounced photophobia; both children were given strengthening diet, and the older boy Fowler's solution. Both children got well in about five weeks.

Bladder Irritation of Girls.—Little girls are more liable to urinary incontinence than boys. Every one is called upon to treat these little patients, and the condition is sometimes a difficult one to compass. If the urine contains blood and mucus, the following conditions naturally suggest themselves: Diabetes, azoturia, calculus, tubercle or malignant growth. The last are rare and improbable. W. D. Spanton (*Med. Press*, Feb. 24, 1904) states that he has found that a form of woolen undergarment, frequently used in England, has often been the cause of incontinence in little girls. The woolen hairs in this rather loosely woven tunic, if the garment fits the body closely, rub off easily and lodge on the labia. These woolen hairs are fitted with minute hooks which enable them to pass upward through the urethra into the bladder. Several children which he has examined and successfully treated have presented just this condition.

EYE, EAR, NOSE AND THROAT.

Treatment of Ozena.—It has been suggested by several observers that some etiological relation existed between this disease and abnormal width of the nares, and the proposition was therefore made to influence the course of the process by diminishing the size of the opening. This may be accomplished by the injection of paraffin into the inferior turbinate bone and H. Fliess (*Berl. klin. Woch.*, March 17, 1904) has employed the method in 12 cases. The nose is carefully cleaned and all crusts removed. The site of operation is then thoroughly cocainized and the paraffin injected into the most atrophied part of the turbinate and if necessary into the septum. Both sides may thus be treated at one or more sittings. All the cases showed distinct improvement, the relief from symptoms being very marked, although in no instance did a complete cure result. The only unpleasant sequelæ were pains in the frontal region in a few cases, which disappeared, however, in the course of a day. Hard paraffin, with a melting point of 50 to 52° C., is recommended as being most suitable and safest.

Choroidal Inflammation Due to Excessive Use.—Although continuous use of the eyes on small objects is frequently mentioned as a cause of inflammatory action, such cases are seldom seen in previously normal eyes and especially only after very prolonged use. D. B. St. J. Roosa (*Med. Rec.*, Feb. 20, 1904) reports the case of a physician who, after reading almost continuously for about ten hours, found that there was a blur over his eyes, apparently both being affected at first, but later he concluded only the right was involved. He took no pains to rest the eye and the condition remained about the same for six weeks, when he consulted the author, and it was found that the vision in the right eye was $^{20}/_{30}$ and the vitreous lumen was hazy. The left eye was normal. The case was seen several times during the subsequent five or six years and the vision in the right eye remained just the same. The haziness of the lumen cleared up and several spots of choroidal atrophy were to be seen. The retina was not at all involved and the process evidently did not progress. It is interesting to note that this is a traumatism instead of an infection of the eye and that such mechanical causes may appar-

ently produce conditions entirely similar to those from pure infection.

Celluloid Plate in Saddle-Nose.—Although the results obtained by paraffin injections have been, on the whole, satisfactory in rectifying deformities of the nose they are not entirely void of danger, for several cases of embolism have followed the use of this material. J. Wiener, Jr. (*Med. Rec.*, April 16, 1904) successfully introduced a celluloid plate some three years ago in a case of marked deformity with subsequent most happy results. He made an incision about one-quarter of an inch long on the under side of the nose and through this small incision with iridectomy scissors, a subcutaneous flap was made over the depressed bridge of the nose. A piece of celluloid plate about half an inch wide, an inch long and a thirtieth of an inch thick, was sterilized by boiling for a few minutes in soda solution, readily molded to the shape of the bridge of the nose, and then introduced through the small opening until it occupied the space of the subcutaneous flap. One suture closed the wound, and to avoid pressure no dressing was applied. Only slight swelling occurred, and no subsequent discomfort has appeared from the presence of the plate. The profile of the face is very satisfactory.

GENITO-URINARY AND SKIN DISEASES.

Mercurial Exanthemata.—The most common form of mercurial eruption, according to E. Tomasczewski (*Zeitsch. f. klin. Med.*, Vol. 51, Nos. 5 and 6) is mercurial acne, such as occurs on the hairy parts of the extremities in the form of nodular infiltrations of livid color, about a hair follicle. This, as well as various forms of transient dermatitis on the flexor surfaces of joints are only induced by the external application of the drug. Eruptions after internal use may be of manifold character, from an erythema without desquamation or subjective symptoms up to severe vesiculation and pustulation with involvement of nails, hair and the mucous membranes and such severe constitutional disturbance that a general disease may be suspected. Thus measles, scarlet fever, erysipelas, hemorrhagic purpura, multiform exudative erythema and acute eczema may be simulated. Even the diazo-reaction may be positive. The appearance of an eruption is independent of the combination employed and of the way it is employed. There is nothing typical about form-grouping and distribution of the lesions but the peculiar violet color, extensive desquamation and the rapid disappearance after the drug is stopped, are often typical. If the drug is introduced anew, the diagnosis can often be made by observing an exacerbation. In some cases mercury can be detected in the urine and the feces. Idiosyncrasy plays an important rôle, but it is more an idiosyncrasy of organs than individuals, for in some the skin is readily affected, in others the internal organs, in still others the nervous system. Patients who react readily by salivation and rise of temperature must be classed among the latter. Strangely enough, the organs in which mercury is usually deposited, are not the same as those affected by idiosyncrasy. The same organ will generally continue to react even where the method of application is changed. In conclusion, a peculiar local reaction in syphilis is mentioned which may be of diagnostic value. Twelve to twenty-four hours after an injection of salicylate of mercury a macular or maculo-papular luetic eruption will spread or become confluent and the color will become more violet, so that the experienced can suspect that an injection was given, if he has seen the case before.

Etiology of Alopecia Areata.—Since the publication of Sabouraud's work on seborrhea oleosa and its bacteriology, a great impulse has been given to the trophoneurotic theory of its origin. The old belief, of course, was that it was invariably of a parasitic nature. Arthur Whitfield (*Lancet*, March 5, 1904) states that although Sabouraud was forced to give up his belief that seborrhea was the cause in all cases and to differentiate a special variety in children, stated to be due to some cause other than invasion of the microbacillus of seborrhea. Recently Jacquet has directed attention to the abnormalities in the dentition of these children, which he supposes to have produced a sufficient increase of nervous irritability to account for the bald spots. Although but little work has been done on this subject to prove or disprove the contentions of this last observer, the author believes that it is probable that nerve irritations, particularly of sight, may in certain cases be responsible for the disease. Headache and localized neuralgia, as is well known, have often been accompanied by alopecia areata. He cites four cases in which he found the vision defective, in each of which persistent local treatment was without avail. All four cases were promptly cured by the use of suitable glasses.

THERAPEUTICS.

Red Light Treatment of Smallpox.—If it be questionable whether or not we have as yet isolated the sporozoon of this disease, there is no doubt that advances have been made in the manner of its treatment. J. T. C. Nash (*Lancet*, March 5, 1904) records 12 cases treated in ordinary light and 13 treated under red light. In the first table, there were four deaths. In the second table there was but one. Medical treatment was practically confined to acetozone, about six grains a day. The author believes that the suppurated stage was considerably modified by the influence of the red rays or by the exclusion of the other light elements. The one death recorded was from confluent hemorrhagic smallpox, the case being moribund on admission to the hospital. One disadvantage of a red light ward is that the physical appearance of the smallpox eruption cannot be appreciated or demonstrated as is possible in ordinary daylight.

Treatment of Eclampsia.—The employment in eclampsia of chloral hydrate in suppositories is an old and well-tried remedy, and Mansuroff (*Prakt. Vrach*, No. 11, 1904) reports a case where this drug has undoubtedly saved the life of a twenty-year-old primipara that is of sufficient impressiveness to be abstracted here. The woman when brought to the hospital had a series of extremely severe eclamptic attacks that seriously threatened her life. She was at once given an enema, and then after an evacuation of the bowels, a glass of warm water was injected containing 15 gr. of chloral hydrate and 10 drops of the tincture of opium. As this was not retained for any length of time, another one was administered; cold to the head and mustard on the neck. The condition of the patient precluded the possibility of any internal administration of drugs. In 3½ hours a third clyster was administered; by this time the convulsions ceased though the patient was still unconscious. Eight hours later the patient opened her eyes and complained of vomiting. A fourth clysma was given which induced quiet sleep for an entire day. Later on uterine contractions supervened, and the patient gave birth to a live, strong baby. There was an alarming post-partum hemorrhage, after which the patient felt considerably relieved, "much clearer in her mind." Post-partum course normal. Altogether there were nine attacks, of which four were of great severity, lasting over five minutes each and followed by unconsciousness of many hours. It is hard to undestand why sciousness of many hours. It is hard to understand why as possible, by either version or forceps.

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RACIAL DEGENERACY AND AMERICAN PROGRESS.

LONG before the days when Horace described the old man as *laudator temporis acti se pueri*, a praiser of times past when he was a boy, it was the custom for the elders of each successive generation to insist that things are not what they used to be, and that while the end may not exactly be in sight, at least it is being approached with giant strides now that they are no longer young. The world has not changed much and every generation since Horace's time has had many who have felt this way.

In our day everybody dabbles in medicine and as a consequence medical terms are used to express pessimistic ideas, and racial degeneracy and the like are heard on every side as one of the easily recognized signs of the times. We are not of marked pessimistic tendencies ourselves, and so we are glad to note that at least one of the important magazines, *The World's Work*, is ready to lend its columns to a disproof of the idea that our generation is degenerate, and to show on the contrary that there is noteworthy proof of progress in every department of life.

Of course this will not suit the pessimistically inclined. There are many followers of Schopenhauer, of whom some one recently said that he was never so happy as when he was realizing how miserable he was. It would be well, however, for some of the croakers to consider seriously how ample an apology can be made for our present conditions, for the series of articles mentioned seems to make out a very good case for the theory that conditions in American life are growing better every year. Our schools are better, our educational system is constantly developing, and our great universities are coming to be examples to the world in their line. In spite of the frequent assertion of the lack of esthetic sense among Americans, the appreciation for art is widening every year, and the liberal patronage of art is becoming the fad of every American who has any money.

Notwithstanding alarmist reports in sensational newspapers there is less dishonesty and those who are engaged in questionable financial operations are being pilloried in public in a way that shows a higher sense among the people of morality in contradistinction to mere legality that is very promising for the future. Charity organization has done its work; our tenement houses have been improved so that now life has become much more livable in the slums and health is much easier to maintain. If we consider the difference in the conditions that obtain at the present moment in New York's most thickly populous district, bad as they may still be, and admitted to be in many ways still capable of improvement, they are so far above those which were common even a quarter of a century ago as to make the comparison seem indeed odious. Even municipal beauty, for its own sake and for its uplifting effect upon even the lower classes, has become an object in the civic life of great cities and all the citizens are sharing in the inspiring effect of the application of art principles even to our city streets and vistas.

Long ago Edward Everett Hale said "Look up, not down; look in, not out, and lend a hand." At the present moment there is much reason to be proud of what has been accomplished in recent years by those who have not idly talked race degeneracy, but who have shown ways and means and possibilities of improvement. The present generation is not a bit worse than any of its predecessors and is in many respects decidedly better. There still remains much to be done for general improvement, much that will redound to the health as well as the happiness of mankind, much in which members of the medical profession must be, as they have been in the past, leaders. Nothing is so inspiring as to find how much good has

been accomplished by what has been done already. Hence we welcome as especially opportune this successful attempt of our New York contemporary to demonstrate by actual statements of fact that the talk of degeneracy is idle and empty complaining, while the world's willing workers are accomplishing great things.

MEDICAL GRAFT.

The Physicians' Club of Chicago recently devoted a whole evening to the discussion of professional graft, without arriving at a satisfactory definition of the word; but Dr. Enricus Cordus, who published a very keen and clever little paper on "Medical Graft" in the June number of *The World To-Day*, defines graft,—political, medical, legal, etc.,—as "unearned pay obtained for real or fancied service." He then outlines some of the opportunities offered to physicians to obtain money from an ignorant public.

The temptation to perform unnecessary operations, and to make superfluous visits, is often offered by the patient's own anxiety and credulity, and it is small wonder if some of the younger men yield to the easy method of increasing their income and become repeaters and alarmists. The size of the fee has no relation to graft. A wealthy man is quite as willing to pay a large round sum for expert care in saving his life, as he is for the legal advice that saves his property, but the physician who demands cash payment of a sum that is out of all proportion to his patient's means, before he will come to look at the case, is a grafter of the meanest order, whom his brothers send to Coventry along with those who extort hush money, and threaten blackmail to the indiscreet patients who have been in their care.

But as a rule, Dr. Cordus says, he finds that out and out grafting is left to quacks. Personally, he says he has known during thirty years, only three medical men to whom he could honestly apply the word grafter. One of them left the profession and became a gambler; the second committed suicide while in jail, and the third, who ought to be serving a life sentence in a penitentiary, occupied a position on the staff of a temperance hospital.

There is a distinct tendency toward commercial graft that is fostered not by the physician himself, but by the promoters of mineral waters, commission-giving drug stores, or proprietary firms, who offer the physician stock, or a percentage for the sake of his exclusive patronage; but few such cases ever amount to anything, and as the initiative always comes from the outside, it is hardly fair to blame the physician if he occasionally falls prey to the promoter.

Dr. Cordus discusses the question of so-called hospital graft, with the very just conclusion, that it is the public that is the grafter. "No other profession," he says, "is as absurdly altruistic as physicians, in this matter of hospitals. They give their time and services to institutions that could not possibly exist without them, but have no voice in their management, and if by any chance their attitude becomes business-like instead of charitable, it is hinted that their motives are mercenary and unethical. There must be on this matter as well as in the matter of dispensary practice a radical change within a few years, or the grafting public will hold the ethics of the profession in derision."

The conclusion of the article places the medical profession justly, we feel, among the most honorable of all professions. Oliver Wendell Holmes, when asked why physicians did such things as have been suggested, replied that he never knew one to do so. "Once," he said, "I looked up such a report, and found that the man was a quack. Physicians never do such things."

"In the face of limited income, perpetual demand for charity, and innumerable opportunities for graft, the American physician is, as a rule, the graftee, and not the grafter."

ECHOES AND NEWS.

NEW YORK.

Appointment of Dr. Pryor.—Dr. William R. Pryor Professor of Gynecology at the New York Polyclinic Hospital, has been appointed Attending Gynecologist to St. Vincent's Hospital.

The P. & S. and Hospital Appointments.—The pre-eminent position of the P. & S. in the matter of hospital appointments is made prominent in this last year's success. Of the graduating class of 174 of 1904, 131 men had obtained hospitals by July 1, 1904.

Hospital for Queens Beaches.—A movement is under way for the establishment of an emergency hospital in the Fifth Ward of Queens Borough, which comprises the summer resorts of Far Rockaway, Edgemere, Arverne, Belle Harbor, and Rockaway Beach. A permanent organization has been organized to push the project toward a reality.

St. Elizabeth's Hospital.—The new St. Elizabeth's Hospital will be completed in September. The new building is situated on the north side of Fifty-first Street between Ninth and Tenth Avenues. It consists of five stories and basement, and will be divided into thirty-five private rooms and two wards, these having from fifteen to twenty beds each. The hospital admits women and children. The old building is still situated on Thirty-second Street, on the site of the new Pennsylvania station, it being the only structure left.

This Year's Charitable Appropriations in New York.—"The amount of appropriations made this year for new buildings, repairs and improvements at the New York State charitable institutions is somewhat

disappointing," writes *Charities*. "The appropriation bills, as passed by the legislature, made a fairly satisfactory provision for the wards of the State, but before these bills became law the appropriations which they carried were reduced over 30 per cent. by the Governor's veto of some fifteen of their items. The figures are given for brevity and for convenience of reference in the following table:

	Amount of Items Provided for in Appropriation Bills.	Amount of Items Vetoed by Governor.	Amount of Items Approved by Governor.
State Industrial School, Rochester	$185,000	.....	$185,000
House of Refuge for Women, Hudson	9,900	$7,500	2,400
Western House of Refuge, Albion	17,000	12,000	5,000
New York State Reformatory for Women, Bedford	59,750	43,000	16,750
Society for the Reformation of Juvenile Delinquents in the City of New York	4,000	.....	4,000
Syracuse State Institution for Feeble-minded Children	4,500	.....	4,500
State Custodial Asylum for Feeble-minded Women, Newark	46,600	41,000	5,600
Rome State Custodial Asylum	96,150	42,500	53,650
Craig Colony, Sonyea	42,250	28,950	13,300
New York State Soldiers and Sailors' Home, Bath	28,090	.....	28,090
New York State Woman's Relief Corps Home, Oxford	5,150	3,000	2,150
Thomas Asylum for Orphan and Destitute Indian Children, Iroquois	16,000	.....	16,100
New York State School for the Blind, Batavia	34,930	1,500	33,430
New York State Hospital for the Care of Crippled and Deformed Children, Tarrytown	.....	.....	.....
New York State Hospital for the Treatment of Incipient Pulmonary Tuberculosis, Raybrook	7,350	.....	7,350
	$556,770	$170,450	$377,320

The largest of the items vetoed was $40,000 for an employees' cottage to accommodate 100 at Rome, $38,000 for two cottages for inmates at Bedford, $28,000 for a cottage for inmates at Newark, and $22,950 for the enlargement of the central heating and power plant at Craig Colony. It is estimated by the fiscal supervisor of State Charities that the last named improvement would save the State from $4,000 to $5,000 a year, and in the interests of the taxpayers it seems unfortunate that such an appropriation should be deferred. The veto of the appropriations for new buildings for inmates, or for employees, who would vacate space in residence buildings which could be used for inmates, at the institution for defectives, are particularly to be regretted, as there are large numbers of defectives now unsuitably cared for in almshouses and homes. The Reformatory for Women at Bedford has already passed the limit of comfortable capacity and is equally in need of expansion, especially in view of the fact that a new law adds eleven new counties to the district from which it draws its inmates. The Governor's reason for vetoing most of the items, this year as last year, seems to be that in his opinion the necessity for them is not immediate. Delay in making necessary repairs and providing necessary buildings seldom results in a saving to the State, however, for repairs neglected cost more in the long run, and the postponement of needed new accommodations subjects the institutions to inconvenience and leaves society without the protection which it ought to have against the increase of the defective and the delinquent classes. Most of the appropriations which are made this year were asked for last year and refused, and it is probable that the appropriations which have been refused this year will have to be allowed next year. The amount of the items vetoed, therefore, does not represent a saving but a deferring of expenditure.

New York State Tuberculosis Hospital.—This State institution at Raybrook, N. Y., opened on July 1, with accommodations for about fifty patients. A camp of tents has accommodations for forty-four. To patients who can afford to pay for treatment, a charge is made of the actual cost of maintenance. Only patients with incipient tuberculosis are admitted. The examiners in this city are: Dr. Hermann M. Biggs, 5 West Fifty-eighth Street; Dr. Egbert Le Fevre, 52 West Fifty-sixth Street; Dr. George F. Laidlaw, 58 West Fifty-third Street, and Dr. W. H. Vandenburg, 32 West Forty-ninth Street. The institution may be reached by the New York Central or the Delaware & Hudson railroads. Dr. John H. Pryor, formerly of Buffalo, is superintendent of the hospital.

Plans for the New Manhattan Eye and Ear Hospital.—The Manhattan Eye, Ear, and Throat Hospital, now at Forty-first Street and Park Avenue, is soon to be moved. For many years the accommodations have been insufficient. In the thirty-four years of the hospital's existence the city has grown in population from 950,000 to about 4,000,000, and in area from about 20 square miles to over 300. This great increase has not been met by a proportionate growth on the part of the hospital. The increase in the number of patients from 1,717 in 1869 to 28,479 in 1903, gives an idea of the overtaxed condition. When it became absolutely necessary to meet the requirements for more room, a building committee was formed and ways and means were discussed to the end of acquiring a new site and building. The present property is worth over a half million dollars, and this, combined with the voluntary contributions and other revenues possessed by the institution, constituted a fund sufficient to warrant the acquisition of the nine lots next door to the Baron Hirsch Trades School in East Sixty-third Street. York & Sawyer were selected to design the new building. The capacity of the old building under normal conditions is fifty ward patients and eight private patients. The new institution will accommodate 400 ward patients and about 50 private patients. There will be two buildings; one on the north side in the shape of a horseshoe, so that its wings will be lighted on three sides and receive the sun all day, and the other a lower larger building on the south side for administrative purposes, including rooms for nurses, servants, the superintendent, and the members of the staff. In the north building or hospital proper the entrance floor is to be occupied by the reception rooms and offices, and the floor directly above will be the eye clinic. Above this floor there will be six more stories of wards. Above these will be two floors for private patients, and the next floor will contain the three separate operating rooms for the eye, ear and throat departments. On the top floor will be the pathological and bacteriological laboratories, the kitchen, the dining rooms for nurses, and other apartments considered necessary in a modern hospital. Each physician is allowed to send his poor patients to the institution, but he himself must prescribe for them and he alone is responsible for their welfare. These patients must pay for their treatment if their doctor thinks they can do so, thus preventing any abuse of the hospital privileges. The private patients occupy separate rooms, for which they pay; and they are taken care of by their own physician. No one is refused admittance except in rare cases when the patient can but will not pay the small fee charged. The hospital has a post-graduate department, where any physician in possession of a degree may take a course which lasts about three months, and in this way become thoroughly familiar with new

phases of surgery exemplified in the various departments comprised by the hospital.

Manhattan Dermatological Society.—Regular monthly meeting held on Friday evening, June 4, 1904, at the residence of Dr. R. Abrahams, with Dr. I. P. Oberndorfer presiding. The following cases were presented:

Dr. L. Weiss showed two cases; one a young girl with a sluggish granulating ulcer on right cheek; of several months' duration and exceedingly rebellious to treatment in the beginning, but later on doing well under creosote salicyl plaster; presented as a scrofuloderma. Case II. was one of erythema iris, in a young girl of fourteen years; lesions present on upper right and left arms, upper right and left thighs, and one on abdomen; the lesions were markedly symmetrical, diagnosis concurred in.

Dr. E. L. Cocks exhibited a boy with palmar psoriasis; the question of differentiating chronic eczema, or possibly syphilis, was answered by the presence of guttate typical psoriatic lesions on other parts of the body. Diagnosis accepted.

Dr. Gottheil showed a well-marked case of leucoderma in an elderly male patient; these patches were absolutely white and blanched, in marked contrast to the deeply pigmented areas of surrounding skin; the latter was so extensive and deeply pigmented as to raise the question whether a new deposit of pigment was coincidently going on with disappearing pigment in other areas. Dr. Gottheil inclined to accept this view. Dr. Gottheil also showed an elderly male with a large fungating, granulating mass on right wrist, which he termed fungating epithelioma; of many months' duration and slowly increasing.

Dr. I. P. Oberndorfer presented the patient who was shown at the May meeting; at that time Dr. Oberndorfer made a provisional diagnosis of morphea; the lesion on the chin showed marked induration. Dr. Oberndorfer reports that under K.I. treatment the condition is considerably improved.

Dr. Geyser showed two cases. The first was shown to illustrate the beneficial effects resulting from high frequency currents in the treatment of acne indurata of the face; this patient's condition improved wonderfully, so that no lesions are now apparent, and there being no recurrence within the last four months; patient was seen at a previous meeting.

The second patient, a girl of eleven years, after exposure, developed typical vesicles, blebs, redness and itching, characteristic of dermatitis venenata, on both hands, dorsal surface; eruption faded away in the fall; the following spring a somewhat similar outbreak occurred; this without exposure, to remain all summer and again fade away in the fall. A third outbreak occurred the following spring (this year). Some signs are now present, consisting of an eczematous condition. Drs. Cocks and Gottheil can recognize only an eczematous condition present; it may have been a dermatitis venenata originally, with recurrent attacks of diminishing severity; subsequent attacks not necessarily due to new exposure. Dr. Oberndorfer diagnosed recurrent dermatitis venenata; the second attack, unlike the first one, needed no direct exposure.

Dr. R. Abrahams presented a mother and her eleven-weeks-old infant, both subjects of syphilis; he believes the mother's acquired and the infant's hereditary; the mother shows squamous lesions on palms and soles, and some on shins. The mother states she noticed a swelling on labium and in the groins six weeks after her last confinement One week ago child's body showed a typical roseola. Husband states he had a chancre, but many years ago; no recent lesion. The question Dr. Abrahams asked, Did the child infect the mother? or was the mother long syphilitic? Dr. Ochs believes the child's syphilis is hereditary; the lesion on the mother's labium was probably a late secondary lesion; the mother having had syphilis for some time. Dr. Sobel expected to find lesions on the child (if congenital) much sooner than ten weeks after birth. Dr. Gottheil argues with Dr. Ochs; infection of the mother is probably of one or two years' duration. Dr. Oberndorfer said history was incompatible with congenital syphilis.

Dr. Abrahams then showed a woman aged thirty-five years; history of long standing bronchitis, headaches, general malarial and gradual weakness, and loss of flesh; patient is poorly nourished; the father died of diabetes and a brother of tuberculosis. Ten months ago the skin began to get dark, on exposed surfaces especially. A provisional diagnosis of Addison's disease was made. Dr. Gottheil did not coincide in this view; he believes the pigmentation due to continual exposure and on the body to the existence of a chronic eczema and continual scratching; the latter still quite evident. Dr. Sobel takes exception to diagnosis of Addison's disease; the mucous membranes are not involved; history of diabetes in the father and beginning symptoms of diabetes in the patient, such as throat, polyuria and loss of weight, make him think of the condition known as bronzed diabetes. Dr. Wainwright was of the same opinion; history was suspicious of diabetes. Dr. L. Weiss considers but two conditions: (1) pigmentation due to exposure; to long continued scratching on body and (2) patient's history favors diagnosis of bronzed diabetes. Dr. Oberndorfer was inclined to agree with Dr. Abrahams in calling it Addison's disease.

Dr. Abrahams also presented a case of dermatitis exfoliativa with alopecia capitis; the latter he considers a rare combination. Dr. Gottheil believes the two conditions to be distinct and have no connection.

Dr. B. F. Ochs presented the following cases: (1) A male; six years ago a row of hard papules showed on the face; they assumed a crescentic outline and the patches assumed the size of a silver dollar; the patches were symmetrical; one on each side of face near the lobe of the ear; never got well; the center of patch is hyperemic and the margins, consisting of hard papules, are distinctly raised and hard to the touch. Dr. Gottheil considered it lues. Dr. Cocks entertained leprosy. Dr. Oberndorfer said symmetrical grouping favored diagnosis of lues. (2) A male with gumma of the tongue; a hard, globular mass on dorsum of tongue; present about two weeks and is beginning to ulcerate. The scrotum shows old striation and patient states at this site he had a sore (chancre) four years ago, which was cauterized and which healed rapidly. (3) An interesting case of syphilis in husband and wife; the husband had his chancre six weeks ago on the penis, followed by inguinal adenitis and roseola; evidence still present; the wife shows axillary, epitrochlear and cervical adenitis, and a chancre on left tonsil; mode of infection not determined.

PHILADELPHIA.

Sentenced for Malpractice.—One of the results of the coroner's recent crusade against malpractitioners has been the conviction of Dr. G. A. Appel, of Germantown, who was sentenced by Judge Davis to two years in the penitentiary. Two other indictments against him were dropped.

Free Maternity Incident Closed.—The Free Maternity Hospital Service of Philadelphia which two years ago scattered some 15,000 contribution boxes throughout the State, has been ended by the acceptance of the receiver's report. The society was originally re-

fused a charter because its expenses were out of proportion to the work accomplished. The funds in the boxes will only cover the cost of litigation.

First Conviction of Illegal Practitioner.—The first conviction under the recent activity of the State Board of Medical Examiners is that of Thomas E. Eldridge, who has been fined $200 for practising medicine illegally. The maximum penalty is $500. Eldridge possessed a diploma given him by the Eastern College of Therapeutics and Psychologic Medicine of Philadelphia, but no such institution is recognized by the board. Eldridge employed electricity and the X-rays and also essayed the giving of drugs which proved his undoing.

Douglass Memorial Hospital.—Plans are being considered to provide new buildings and equipment for this institution, which is conducted for the benefit of the negroes of the city. The entire staff, except the consultants, are colored, and this year a class of five colored nurses was graduated. The work of the hospital has been steadily increasing during the eight years of its existence.

Food Adulteration Prosecutions.—Prosecutions by the State Dairy and Food Commissioner have reached practical results in holding for court 14 milk dealers whose products have been analyzed and found to be adulterated. Warrants for nearly 20 more have been issued. The Bureau of Public Health and Charities is co-operating with the State officials. Many dealers outside of Philadelphia are also involved in the investigation of Commissioner Warren, who is beginning to reap the results of his untiring efforts. In Altoona 30 grocers have been arrested for selling adulterated apple butter, chocolate, cherries, and maple syrup. Definite steps have been taken toward fitting up a chemical laboratory in connection with the Commissioner's office at Harrisburg.

CHICAGO.

Commencement Exercises of Dearborn Medical College.—This college graduated its first class June 30, at which time degrees were conferred on fifteen men and three women. The degrees were conferred by the President of the College, Dr. L. Blake Baldwin, and the Doctorate Address was delivered by Judge Richard S. Tuthill.

Chicago Hospital.—The Chicago Hospital Building Co. has given a deed of the property to the Chicago Hospital for a consideration of $135,000. The property is located 110 feet east of Cottage Grove Avenue, and has a frontage of 75 feet and a depth of 132 feet. The hospital is located at 452 Forty-ninth Street. The improvement consists of a five story brick building. The transfer was made subject to an incumbrance of $30,000, and the grantee has given a trust deed to the Merchants' Loan and Trust Company to secure an additional loan to John T. Binkley, of $40,000 for five years at 5 per cent.

Investigations of Health Commissioner Reynolds in Regard to Dairy Farms.—The following is a summary of the most important results of the Commissioner's personal investigation of a number of dairy farms in this and adjoining States from which Chicago receives its milk supply:

1. An increasing proportion of Chicago's milk is delivered to the consumer within twelve hours after milking. The bulk of it, however, is from twenty-four to thirty-six hours old before delivery. There is no insuperable reason why it should not all be delivered within the shorter period and every effort of the Department is being made to this end. 2. There is much room for improvement in the conditions of milk production on nearly all the dairy farms visited, except those under the direct supervision of a few large contracting firms. The dairy inspectors of the Department are engaged in visiting this class of farms, explaining to their owners the necessary requirements, reporting upon their conditions, and recommending the exclusion of their product from the Chicago market if, after a reasonable time, they fail to conform to these requirements. 3. It costs more to produce clean milk than dirty milk—therefore, cheap milk is, prima facie, impure and unwholesome milk and the housekeeper who buys it is helping to perpetuate unclean conditions of dairies and helping to swell the death rate of the city, by having her babies die off from diseases caused by poor and impure milk. The consumer should make it an object to the milk producer and the milk dealer to furnish a clean, fresh and wholesome product, by being willing to pay a fair price for such product and by giving personal attention to its quality and proper care after its receipt.

CANADA.

Annual Meeting, Ontario Medical Council.—The annual meeting of the Ontario Medical Council was held during all of last week in the Council Chambers, Toronto, under the Presidency of Dr. J. A. Robertson, of Stratford. Since last session two prominent members have died, viz., Dr. V. H. Moore, Brockville, and Dr. J. H. Sanster, Port Perry, their places having been filled by Dr. Herald, of Kingston, and Dr. Bascom, of Uxbridge. After hearing the annual presidential address, the following officers were elected for the ensuing year: President, Hon. Dr. Sullivan, Kingston; vice-president, Dr. A. A. Macdonald, Toronto; Registrar, Dr. P. A. Pyne, M.P.P.; Treasurer, Dr. H. Wilberforce Aikins; Auditor, Dr. J. C. Paton. A communication was submitted from the Hon. Alfred Lyttleton, Colonial Secretary, referring to the fact of a private member's bill before the British House of Commons, providing that when any part of a British possession was under both a central and a local legislature the King might by order-in-council declare any such part under a local legislature to be a separate British possession. The object of this measure was to enable reciprocal arrangements to be entered into under the Medical Act of 1886 with such provinces of Canada as desired to do so. The Ontario Council thought that Great Britain in this matter would be having the best of any such bargain, and in the absence of more explicit information on the subject laid it over until the next session in 1905. The Council decided to sell their present building and erect new quarters and tenders will be called for without delay. The matriculation standard was raised, 40 per cent. now being the minimum required on each subject and 50 the minimum on the aggregate in Ontario. A prolonged discussion took place on alcohol in patent medicines, and it was resolved to memorialize the Dominion Government on the matter requesting that every such article of manufacture exposed for sale should have the formula printed thereon. Another matter of great importance dealt with was the question of an authorized tariff for the Province. A special committee had had this matter under their attention during the past year with the result that their scheme submitted to Council was endorsed and recommendations made that the legislature be approached and same be legalized. The examination committee reported that at the examinations just held 142 candidates had presented themselves in the final year, of whom 93 passed and 49 failed to qualify. An amendment was adopted to the fifth-year course providing for these students receiving a certificate after having spent a year in a hospital with over fifty beds, or for one year assistant to a doctor, instead of taking the fifth year lectures.

Congress of French Doctors.—The second congress of French-speaking physicians of America was held in Montreal, June 28 to 30, the sessions being held in the Convocation Hall of Laval University. Dr. Pozzi was the official delegate representing the Academie de Medicine de Paris and while in Montreal performed operations in the Notre Dame and Royal Victoria Hospitals.

Appointment.—The provincial government of New Brunswick has appointed Dr. J. V. Anglin, of Montreal, superintendent of the New Brunswick Hospital for the Insane at a salary of $2,500 per annum. Drs. G. A. B. Addy and Travers have been looking after the patients at the hospitals since the resignation of Dr. Geo. Hetherington some months ago.

News Items.—Laval University, Montreal, this year conferred the M.D. degree upon 40 candidates, and 18 received the degree of Bachelor of Medicine.

Dr. R. J. Manion, gold medallist from Trinity University has been appointed to the house staff of the General Protestant Hospital, Ottawa.

Dr. R. Tait McKenzie, head of the practical anatomy department at McGill University has been invited to become medical superintendent of the college gymnasium of the University of Pennsylvania. Dr. McKenzie is at present in Paris, and it is understood that he may possibly accept.

At the coming meeting of the British Medical Association Dr. T. G. Roddick, M.P., of Montreal, and Dr. William Osler, of Baltimore, will have conferred on them by Oxford University the degree of Doctor of Laws, *honoris causa*.

A sanitarium for the treatment of consumptives is to be erected at Kamloops, B. C., and toward the purpose the Canadian Pacific Railway will contribute $5,000.

GENERAL.

Harvard Medical Graduates.—On June 29, the faculty of the Harvard Medical College conferred the degree of Doctor of Medicine upon 130 men.

Harvard's New Buildings.—It is announced, says *Science*, that work on the buildings for the Harvard Medical School has not progressed as rapidly as had been hoped, and that they will probably not be occupied until the autumn of 1906, instead of 1905, as was originally expected.

Yale Medical Graduates.—The *Times* says the graduating class of the Yale Medical School numbered twenty-three. The following were announced at the commencement exercises on June 29: Degree of M.D., *cum laude* to Emanuel Charles Fleischner, New Haven, Conn.; Carlos Grout Hillyard, Saxtons River, Vt.; Julius Harold Rush, Washington, D. C.; Nathan Tolles Pratt, Bridgeport, Conn., and Burton Isaac Tolles, Ansonia, Conn. The Campbell Gold Medal was awarded to Emanuel C. Fleischman with honorable mention to Nathan T. Pratt and the Keese prize of $145 was divided equally between Charles G. Hillyard and Nathan T. Pratt, with honorable mention to Julius H. Hurst.

Warren Prize.—The Warren Triennial Prize of the value of $500, in the gift of the Massachusetts General Hospital, has been awarded to Dr. Max Borst, extraordinary professor of pathological anatomy in the University of Würzburg, for a dissertation entitled "Neue Experimente zur Frage der Regenerationsfähigkeit des Gehirns."

Statue to Dr. William Elias B. Davis.—We learn from the *Alabama Medical Journal* that the memory of Dr. William E. B. Davis, late of Birmingham, Ala., will be appropriately perpetuated by the erection of a monument by the Southern Surgical Gynecological Association, of which Dr. Davis was the originator as well as founder. He not only conceived the idea, but organized the association in all its details and served as its secretary and executive officer for thirteen years. The association does well in thus testifying its appreciation of this distinguished physician, whose memory will live in spite of granite or bronze. The statue will be made by G. Moretti, who was the designer of Vulcan (the Colussus iron man which represents the Birmingham district at the St. Louis Exposition) and will be in bronze, 7½ feet high, standing upon a granite pedestal 9½ feet high. Signor Moretti is now making a marble bust of Dr. Davis in Alabama marble. The plaster caste is a very fine likeness. He has made an indemnity contract to have the statue ready by the first of December next that it may be unveiled at the coming meeting of the Southern Surgical and Gynecological Association.

Tuberculosis Talk at Portland.—It was a curious commentary, writes *Charities*, upon the rapidity with which the organized work for the prevention of tuberculosis has taken form in this country, that though that work is now recognized as an important and even necessary function of charitable activity, it was not accorded any formal hearing at the recent National Conference of Charities and Correction, upon a program arranged not more than twelve months ago. It was soon found, however, that among the delegates to the convention were many connected with organizations for the prevention of tuberculosis in different parts of the country and, as was to be expected, the opportunity to talk was not lost by those of our brethren, the corner-stone of whose work is popular propaganda. An informal meeting was accordingly called together at which the addresses were arranged so that each speaker should deal with one phase of the general work, and that the work which had been particularly noteworthy in his city. Thus, Mr. Glenn, the chairman of the meeting, spoke of the fact that in Maryland the medical profession had been the moving spirit in the movement, not merely giving its approval and support after its initiation by laymen, as had been the case in most other cities. The work of the Maryland Tuberculosis Commission had been largely one of research and education, and it was as a part of this work that the tuberculosis exposition had been held recently in Baltimore.

Christopher Easton, deputy superintendent of the Metropolitan Hospital in New York, gave an interesting account of the treatment at the tuberculosis infirmary. Largely, the infirmary serves its best purpose in segregating from the community dangerous cases, and in furnishing valuable object lessons in the proper treatment of tuberculosis to the patients, the thousands of their visitors and to a public becoming more and more intelligently interested in the infirmary. A unique feature of the work at the infirmary is that the deputy superintendent combines with his executive duties the duties of a social secretary, seeing as much of the patients as is possible and dealing individually with a large body of men whose social needs the physicians must ignore or treat *en masse*. The methods of the New York Department of Health and the work of Dr. Hermann M. Biggs in that department were described by Paul Kennaday of the New York committee. The provision of the sanitary code that "tuberculosis is an infectious, communicable disease, dangerous to the public health," the compulsory reporting of cases, the inspection, medical, nursing, fumigating and bacteriological work, the forcible removal of cases, and the dispensary treatment, were described as the combination which had largely helped to reduce the death-rate over forty-one per cent. in the last twenty-one years.

A. M. Wilson of the Boston Committee spoke of the Rutland Sanatorium. This is the first state sanatorium for tuberculosis. It affords Boston the unique oppor-

tunity of adequate sanatorium facilities for all its incipient cases. The close cooperation between the district nurses, the Board of Health and Associated Charities in Chicago was explained by Ernest P. Bicknell of the Chicago Bureau of Charities, and his mention of the home tent treatment, which has there been successfully attempted in a few cases, brought from Mr. Almy, an acknowledgment that he had very little in the way of anti-tuberculosis work to report from Buffalo, where tenement-house matters had been engaging much of their attention. With short addresses by Miss Birtwell, and Messrs. Baldwin, Solenberger and McClain describing conditions in Cambridge, Washington, Minneapolis and St. Louis, and with mutual assurances of mutual aid on the part of those present. It will be noticed that at the next session of the National Conference at Portland, Ore., there will be a special section devoted to this subject with a recognized place upon the program.

Assistant Surgeon Public Health and Marine Hospital Service.—A board of officers will be convened to meet at the Bureau of Public Health and Marine Hospital Service, 3 B Street S.E., Washington, D. C., Monday, October 3, 1904, at 10 o'clock A.M., for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health and Marine Hospital Service. Candidates must be between twenty-two and thirty years of age, graduates of a reputable medical college, and must furnish testimonials from responsible persons as to their professional and moral character. The following is the usual order of the examinations: 1, Physical. 2, Oral. 3, Written. 4, Clinical. In addition to the physical examination, candidates are required to certify that they believe themselves free from any ailment which would disqualify them for service in any climate. The examinations are chiefly in writing, and begin with a short autobiography of the candidate. The remainder of the written exercise consists in examination of the various branches of medicine, surgery, and hygiene. The oral examination includes subjects of preliminary education, history, literature, and natural sciences. The clinical examination is conducted at a hospital, and when practicable candidates are required to perform surgical operations on a cadaver. Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order as vacancies occur. Upon appointment the young officers are, as a rule, first assigned to duty at one of the large hospitals, as at Boston, New York, New Orleans, Chicago, or San Francisco. After five years' service, assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon. Promotion to the grade of surgeon is made according to seniority, and, after due examination, as vacancies occur in that grade. Assistant surgeons receive $1,600; passed assistant surgeons, $2,000, and surgeons, $2,500 a year. When quarters are not provided, commutation at the rate of $30, $40, and $50 a month, according to grade, is allowed. All grades above that of assistant surgeon receive longevity pay, ten per centum in addition to the regular salary for every five years' service up to 40 per cent. after twenty years' service. The tenure of office is permanent. Officers traveling under orders are allowed actual expenses. For further information, or for invitation to appear before the board of examiners, address, Surgeon-General, Public Health and Marine Hospital Service, Washington, D. C.

OBITUARY.

DR. BRYAN G. WILLIAMS, assistant physician Long Island State Hospital at Kings Park, a graduate of Bellevue Hospital, died at sea, May 13, 1904.

DR. CHARLES S. WOODWARD, of 210 East One Hundred and Sixteenth Street, New York City, died at Glens Falls, N. Y., on Sunday, June 26, 1904, after a lingering illness. The *Times*, in speaking of Dr. Woodward's death, says that he was born in Michigan thirty-five years ago, and came to New York when a boy. He took his medical course in New York City, finishing in 1882, and has since been practising in Harlem. He was a member of the New York Medical Society and the County Society.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

LONDON, June 11.

INTERNATIONAL CONGRESS ON HOME RELIEF—THE THERAPEUTIC VALUE OF RADIUM—SURGICAL APPLIANCES LEFT IN OPERATION WOUNDS.

AN International Congress on Home Relief—the fourth of its kind—has been held this week at Edinburgh in the work of which the medical profession took a prominent part. There were five sections which dealt respectively with Children; Old Age; Able-bodied Adults and Sick Adults, and Insane and Epileptics. The opening address was delivered by Lord Balfour of Burleigh, Secretary of State for Scotland, who said that the general object of the Congress was to discuss the methods by which help could best be given to their weaker and less fortunate brethren without relegating them to special institutions where recipients of relief were congregated together. He wished it to be understood that the motive of their meeting was in no way antagonistic to the charitable work carried on in hospitals and similar institutions. The independence of the individual citizen in his own home was the ideal organization of a nation, and any system of public relief ought to interfere as little as possible with that organization. Did he go too far, he asked, when he said that the whole practice of their hospitals, infirmaries, provident dispensaries, friendly societies, etc., and even the work of the private medical practitioner among the humbler classes of the population were in a hopeless state of disorganization? Was it too much to hope that the treatment given by hospitals, if properly organized, could be made supplementary to the treatment of the sick poor by their own friendly society doctor or their own medical adviser, who, inasmuch as he knew the home and habits of his patient, was better qualified to advise than the overworked medical attendant in the out-patient department of a great hospital? He dreaded the direction in which they were tending, and expressed the belief that their hospitals could never obtain enough money to meet the growing demand which the present policy tended to invite. No system for the relief of the poor would ever be satisfactory unless there was full and organized cooperation between voluntary agency and public relief. He concluded by urging them to cherish what there was of healthy home life in the community, as family life was one of the most valuable elements in the social constitution of a nation.

In the Section of Children, Miss M. Horn, school manager under the London School Board, read a paper on "Home Relief in Relation to the Feeding of Infants and School Children," with the view of proving that the feeding of children, from the school as a center, was an essentially bad method of relief, but that many other forms of home relief which tended to induce self-respect and independence on the part of parents could be successfully carried out by capable managers with the cooperation of the teachers. One party advocated free feeding of children by the munic-

ipality, and so ensure, as they argued, that the children were not in a state of hunger when in school and could profit from the lessons taught them. Experience went to prove that where they had carried out energetic and enlightened home visiting, no child need fail to obtain relief if it required it; and secondly, that private charity was sufficient to meet the demand for relief in schools. The demand for help was largely an artificial one, and was created in schools where it was known that relief was likely to be freely given. If charitable committees could be established in every school, to promote hygiene, thrift, apprenticeship, and administer relief if necessary, they should then be nearer an ideal system of home relief in connection with school children, than by any system of aid which attempted to meet obvious needs at the expense of serious deterioration of character.

Dr. H. Wright Thomson, assistant surgeon, Glasgow Royal Infirmary Ophthalmic Institute, read a paper on "Home Relief in Relation to Certain Eye Diseases in Children." Educational methods, he said, had tended to promote shortsightedness or myopia, and means should be taken to minimize this. In childhood it was possible by treatment to affect the future course of myopia by (1) wearing glasses; (2) resting the eyes; (3) improving the general health. City children thus affected might be boarded out in the country, where their condition would improve under better feeding. Another disease of the eyes—strumous ophthalmia—was in a large proportion of cases a direct result of bad feeding. Cleanliness and an abstemious dietary were necessary for its treatment.

The Section of Sick Adults was presided over by Mr. Malcolm Morris, who said it should be clearly understood that the duties to the sick poor were not based entirely on philanthropic sentiment and Christian charity, but were dictated by the law of self-preservation. Invaluable as the work inspired by charity had been in the past, and greater still as they confidently believed it would be in the future, the question was essentially an economic one, and must be dealt with as such if a satisfactory settlement was to be reached. In spite of all that had been done in the past few years for the mitigation of the scourge of consumption, we were still only at the very beginning of the campaign. Sanatoria were springing up all over the country, and municipalities were waking up to the duty incumbent upon them of providing for the consumptive poor. That provision, however, was limited to cases still in the early stage when the disease was curable, while for the advanced cases, which formed a large majority of the whole mass of sickness, there was little or no provision. These cases must necessarily be treated either in consumption hospitals or at home. The consumption hospitals, however, could do comparatively little in the face of the enormous numbers of tuberculous sick. The problem of tuberculosis was, therefore, essentially a question of home treatment. Theoretically, the sanatorium was intended only for what were called incipient cases, but, as a matter of fact, incipient cases were very seldom to be found in these institutions, for the simple reason that they were rarely discovered outside. It was in the home that really incipient cases were to be found, and it was there that they must be looked for and dealt with, either by removal to sanatoria or by such applications of the modern treatment by air, sunlight, and hygiene as might be practicable in the circumstances. As soon as the disease was recognized, the patient should, if possible, be sent to a sanatorium, but at present it was only in an insignificant proportion of cases that that was feasible. They hoped, however, that the day would come when every large town would have a sanatorium of its own for the treatment of the consumptive poor. Compulsory notification of tuberculosis was as necessary in the warfare against the disease as the work of the Intelligence Department was in a campaign, and he thought the legislature should be asked to carry that desirable reform into effect. Dr. R. W. Philip, the pioneer of the open air treatment in Scotland, dealing with the same subject, said a complete organization against pulmonary tuberculosis must include for large cities: (1) A home for dying patients, chiefly in the interest of other persons; (2) a sanatorium or sanatoria for selected patients who, with a view to the care of the disease, require a special regime not procurable in their own homes; (3) colonies for the after-life and supervision of patients in whom the disease has been sufficiently arrested to make selected open-air employment feasible and desirable; (4) a tuberculosis dispensary for the treatment of out-patients which should also be the center of an educational propaganda for the instruction of the public in the means of preventing consumption.

In closing the discussion, Dr. Philip moved the following resolution, which was unanimously carried: "That in the opinion of this Section an organized effort against consumption is required. The Section believes that this will be best effected by the establishment of a properly equipped tuberculosis dispensary, under the direction of the municipality or the local authority."

Professor W. Japp Sinclair, of Manchester, introduced a discussion on "The Means of Home Attendance on Parturient Women in Large Centers." He said it was much to be desired that members of the medical profession should be relieved of certain duties in connection with midwifery cases, without appreciably diminishing their practice and its emoluments. Under the present circumstances there was a constant temptation to hurry through with ill-remunerated cases. Would it not be better for the medical profession to assist in a gradual change in the direction of the custom prevalent in Germany, by which qualified men do not assist cases of labor, except among a class considerably higher socially than those from whom they accept an unmentionably small amount of fee, and to leave the poorer classes of patients to the care of really well-trained midwives? The midwife of the present day must be tolerated as long as she continued to exist and a new order could be established only by the fluxion of time, and by the exercise of such influences as could be legitimately brought to bear in the cause of progress. He had formed the opinion that the best hope of establishing a new order of things with regard to the attendance on parturient and puerperal women must rest upon developments from the public lying-in hospitals which were supported by voluntary contributions. The new order of midwife must belong to a higher class socially than the old, and must be better educated and more highly trained.

In the Section of Insane and Epileptics, Dr. Alexander Robertson, consulting physician, Glasgow District Lunacy Board, read a paper on "The Scottish System of Boarding Out the Insane Poor in Private Dwellings." The special feature of the system was the boarding in the houses of strangers of not more than four harmless insane, those houses having previously been licensed by the Lunacy Board on being satisfied that both houses and guardians were suitable. The Act of 1862 permitted four patients to be in one house; but experience had shown that not more than two was generally the best. The risk with the larger number was the development of a modified asylum—isolation of the insane from the family circle. The kind of guardians which he found most suitable for females were elderly widows with a grown-up daughter at home. For men it was always imperative that there should be a man resident in the

house. For the great body of patients who did not require asylum treatment the boarding-out system was the best.

In discussing the paper, Dr. J. F. Sutherland, Deputy Commissioner-General, Board of Lunacy for Scotland, referred to a Bill introduced into the House of Commons the other day by the Attorney-General, Sir John Batty Tuke and Dr. Farquharson, and others. That Bill *inter alia* was to check the early certification of the insane and all the disadvantages it meant to the individual afflicted, to the families concerned, and to enable the medical attendant to place doubtful or temporary cases in private homes and in observation wards without the need of certification. If this Bill became law there would be fewer certifications and fewer inmates of institutions and more relegated to home care.

Dr. J. M. H. MacLeod, of Charing Cross Hospital, is a very shrewd and honest observer, qualities that make his statements as to the results of treatment more trustworthy than those of many who report on the effects of new remedies. He has tried radium bromide in a number of cases of lupus vulgaris, lupus erythematosus, rodent ulcer and epithelioma, and his experience has led him to the conclusion that the chief utility of the agent is in the treatment of rodent ulcer. In the case of small ulcers it acts "almost like a charm," but in those even of moderate size the treatment by X-rays is more practical. In some cases, however, in which the rays seem to lose their power, they may with advantage be supplemented by radium. In regard to epithelioma his experience is disappointing. He is inclined to regard the agent as of little value in malignant disease and urges the necessity of immediate excision, and the postponement of treatment by the various radiation till after operation. In lupus vulgaris radium is a useful adjuvant to the Finsen light and X-rays, but in lupus erythematosus it is of no use. These conclusions substantially coincide with those of Dr. John Macintyre, of Glasgow, another level-headed and honest observer. Yet a few weeks ago, one of our leading chemists, Sir William Ramsay, told a lay audience at the Authors' Club that radium is "an infallible cure" for lupus. When scientific luminaries talk nonsense of this kind, is it surprising that the papers are full of the miraculous effects of radium in all manner of diseases? One feels inclined to say of Ramsay, as Hamlet says of Polonius: "Let the doors be shut upon him; that he may play the fool nowhere but in 's own house."

Only the other day the name of Mr. Stephen Paget, a son of Sir James, came somewhat unpleasantly before the public at an inquest on the body of a woman who had died after an abdominal operation performed by him. A second operation became necessary and it was found that a pair of forceps had been left behind at the first one. The case was made the most of by the newspapers that deal in cheap sensation, and the surgeon's misadventure made the Philistine—in the person of Stephen Coleridge, the antivivisection agitator, with whom Paget has had a good deal of controversy—rejoice exceedingly. Last week an action for malpraxis brought against a lady doctor, Miss May Thorne, was tried and resulted in the lady being mulcted in damages. In this case, too, the patient was a woman, in whose body a sponge was left after an abdominal operation. These cases have exercised the public mind a good deal. In the first case the accident seems to have been due to a faulty method of checking the number of forceps used, and in the other to the remissness of the nurse whose business it was to count the sponges. At nearly all the London hospitals there is a double check system, the instruments being counted by the surgeon and an assistant or nurse before the operation and again immediately afterward. It has been suggested that such accidents offer a field for a new development of insurance, which would enable patients to insure against the risks of surgical operations, and surgeons against damages for accidents which may happen to the most skilful.

SOCIETY PROCEEDINGS.

AMERICAN SURGICAL ASSOCIATION.

Twenty-fifth Annual Meeting, held at St. Louis, Mo., June 14, 15 and 16, 1904.

(Continued from Page 38.)

SECOND DAY—JUNE 15TH (*Continued*).

New Aids in Diagnosis of Surgical Diseases of the Kidney and their Value.—Dr. A. T. Cabot, of Boston, said that no very startling new devices had been inaugurated during the past year. One method had been suggested, however, for obtaining the urine from one kidney without the use of the segregator or ureteral catheter. It consists in washing out the bladder and then massaging the kidney to be tested for several minutes. This somewhat crude method serves an admirable purpose, so far as it goes, the urine probably being expressed from the kidney and pelvis by the handling. The fundamental difficulty in obtaining guiding information from any form of single organ examination lies in the fact that in health there are wide variations in the secretions of the two kidneys. This makes such tests of little value unless they are carried on over a long period of time. He concluded that segregation is of value in determining the presence of diseased kidneys, but that the question of functional power of the two organs should not be carried too far.

Dr. A. D. Bevan, of Chicago, said that there were two points of very special interest in determining the diagnosis of renal disease. He had recently supervised over three hundred cryoscopic examinations and had determined, first, that this method of diagnosis is of absolutely no value whatsoever when applied to the urine, but of very great worth when applied to the blood of suspected cases. The variation in the freezing point of the blood is a very constant factor. The important further deduction from his observations is that anemia varies the freezing point inversely, as does renal disease, and it is the relation between these two factors which must be studied out and applied before cryoscopy can be made available as an important diagnostic aid. X-ray in renal work is at present with the least doubt *the* most important diagnostic aid; practically 100 per cent. of correct versions being returned by it.

A Case of Acute Pancreatitis Associated with Gall-stones.—Dr. James Bell, of Montreal, described the history of this patient, a physician, upon whom he had operated and subsequently reoperated, to remove a stone in the ampulla of Vater, which was occluding the common duct. At the time of the primary operation, which was for acute pancreatitis, the liver and gall-ducts were grossly, at all events, in normal condition. All signs of the trouble disappeared; the patient was well for two years, then he began to show signs of hepatic trouble. The pancreatitis in this case was the first to develop. The final results were admirable.

Treatment of Cleft Palate.—Dr. Truman W. Brophy, of Chicago, made a strong plea for operation in early infancy. He said that the generally ac-

cepted theory that the lip should be united early and the bone left until late was, in his opinion, a great error. He gave a most instructive lantern-slide demonstration the point of which was to show that in cases of cleft palate the parts are not deficient in bone formation. As shown, the point became clear that these children present an abnormal widening of the superior maxillary arch; that the inferior teeth germs close on each side within the upper circle and that the crowding together of the parts in very early infancy can but serve to place the gums in normal relation with each other. The shock of an early operation may justly be considered to be less than a late one, for the reason that the infant's nervous system is less developed than the child's. The bone should always be moved or bent without fracture and to this end it is necessary that the work be done within the first six months of life. It has been shown conclusively that the constant impact of the wedge-like lower jaw drowe asunder the already separated upper fragments; this alone was a definite argument for early operation.

Dr. A. H. Ferguson, of Chicago, said that while he agreed with Dr. Brophy in that operation should be done at an early age, he believed that infants bear the shock of a major operation badly and for that reason the old plastic methods should be employed, so modified as to move a small rather than a great mass of bone to close the defect.

Dr. George Tully Vaughan, of Washington, said that he believed Dr. Brophy's operation to be founded on fundamentally correct principles and that its author had conferred a great benefit upon mankind.

Dr. Brophy in closing, said that he considered the lateral incisions unnecessary and that all such cuts were open to the serious objection that they too frequently destroyed the continuity of the tensor-palati muscle, thus giving a clumsy palate, often associated with defective hearing. His mortality in over 300 cases had been below three per cent.

The Evolution of Surgery.—Dr. J. E. Mears, of Philadelphia, spoke of the development of surgery from the earliest days to the present epoch. He said that, broadly, the subject was divisible into three great epochs: the first extending from the unknown past to Ambrose Paré: 1517-1590. This period was terminated by the introduction by this most remarkable way of the ligature for hemostasis. The second period ended by the introduction of ether at the hands of J. C. Warren, while the third and greatest was marked by the discovery and adaptation of antiseptics by Lister; 1860-1875. He cited the oft-forgotten fact that a great deal of very good surgery was done by men who lived and practised centuries before Paré. He alluded to the ingenious devices for and methods of teaching along the time-honored paths: wind, phlegm, bile, etc. Among the Hindus the practice was not differentiated to any wide extent, the priests practising surgery or medicine with equal freedom. The tombs of the Egyptians portray the development of the healing art in that wonderful country with clearness and precision. The Greeks being essentially warlike, turned early to find means for healing the wounds of war, but as no dissection of the dead was allowed, progress naturally was exceedingly slow or, indeed, it may be said to have been nil. With the development of the Alexandrian school, however, and the advent of Herophilus, the art developed rapidly into the most astute of sciences. Due entirely to the limitations put upon them by their religion and not to any fundamental lack, the Arabians contributed but little to the development of medicine and surgery, but helped in a very general way in preserving for western civilization the knowledge which had been brought to such a stage of perfection at Alexandria. Ambrose Paré began as a barber-surgeon's assistant, but worked on and on until he published some of the most monumental works in all medicine. The idol of the army, particularly of the rank and file, he was obliged to special finding of the court to justify the use of the ligature by reference to ancient authorities. The influence on the development of surgery of military power cannot be estimated. This can be traced well in the warlike State of Prussia where, until a very recent date, the surgeons were obliged to shave the officers,—a sorry position for one who shouldered such responsibilities as the regimental surgeon. Lister's work transcends all others, for the reason that before the days of chloroform and ether, in the times of Homer and earlier, certain forms of anesthesia were by no means unknown. Mandrake and hyssop were used to solace suffering centuries before Christ. For this reason it can truthfully be said that anesthetics—inestimable boon that they are—stand second to antiseptics. Like all else, the modern practitioner is the product of evolution; from the ear-borer and blood-letter of Paré; from the regimental surgeon of Lister, has developed the finished surgeon of to-day.

Professor S. Pozzi, of Paris, spoke by invitation on the relation of the old Parisian hospitals to the development of surgery. He said that the old Hôtel-Dieu was, of course, the representative of all that is old and venerable in medicine. It was destroyed by fire some forty years ago and most unhappily was rebuilt on the old Roman lines. Now the tendency in France was to erect hospital buildings of a more temporary character. He paid a graceful tribute to the American system of ventilation and stated that he had introduced it in his new Hôpital Broca.

A Mechanical Device for Gastric and Intestinal Anastomosis.—Dr. F. B. Harrington, of Boston, showed his well-known segmented ring which has proved so useful in exploiting this work. The segments are of aluminum, so collared that they brace against each other and thus maintain a circular form when tied together with a bit of catgut. A handle of convenient length passes through the ring to be screwed fast in the inner circle after passing through a segment diagonally opposite. This handle serves admirably to hold and steady the parts during introduction. The ring, as usually made, is seven-eighths of an inch in diameter and breaks up into segments of hardened aluminum, each weighing ten grains. The handle is of steel. At the end of twenty-four hours the ring is held in place more securely than at the time of its introduction on account of swelling. The author showed a set of chamois-skin models of the button *in situ*—a method of invaluable aid in teaching students the various technics. In shape the ring is not unlike Mayo-Robson's bobbin and its manner of introduction is similiar. In conclusion the speaker said that the advantages of the segmented ring lay in its safety, in the ease and speed of its introduction and in its cleanliness. It can be made by any manufacturer, quite unlike the Murphy button, not being dependent for its safety upon a delicate system of springs. It cannot fail to collapse as it is held together by a frail and absorbable strand of catgut. It affords protection to weak spots, specially at the mesentery until danger of leakage has passed. Histological specimens show

that the process of repair during use of this button is just as satisfactory as occurs after suture.

Dr. J. W. Draper Maury showed models of a "Twine Triangular Stitch," such as is employed at the Surgical Laboratory of Columbia, in making experimental gastro and entero-enterostomies. He presented a specimen and demonstrated the method of introducing the twine from a chart. Twine, he said, had recently been substituted at the laboratory for the McGraw ligature and had been shown conclusively to cut through as surely and at about the same rate as the elastic. He said that by using a triangular form of stitch control could be had over the size of the area punched out. In the case of the McGraw stitch a simple linear cut is made.

Dr. A. J. Ochsner said that he shared with most other surgeons the objection to the use of any mechanical contrivance to facilitate the connection of two hollow viscera, but as a matter of fact he believed that their employment was a safeguard to the patient and was therefore to be encouraged. He had long since become convinced that the Murphy button was open to most serious objection. In his last 87 cases he had had recourse to the elastic ligature and had had better success with it than with any other form of technic. In reference to the new button of Dr. Harrington, he said that in its employment he saw the very distinct advantage, viz., that it is sure to have a patent lumen.

Dr. Harrington, in closing, spoke of the action of the muscular waves of the stomach carrying as they had been seen to do, the fragments of his button toward and into the open pylorus.

Results with the Use of Radium.—Dr. Robert Abbe demonstrated a very powerful specimen of this element and presented a complete series of casts, photographs and radiograms which demonstrated the experiments he had been carrying on. He showed among other things the results of his experiments on the effect of exposure to radium rays plant life growth is markedly retarded. In like manner exposure to radium interferes with normal development of worms. Under the rays the worm lives, but remains a worm.

Therapeutic Value.—On small superficial epitheliomata the rays work well. They destroy, not as a cautery, but by some unknown subtle power. This power is a factor to be reckoned with, but as it is ten times more efficient than the Finsen light so as the X-ray tenfold the worth of the radium ray.

Dr. W. W. Keen, of Philadelphia, in discussing this paper said that he had employed radium in 22 cases, and that not in a single one was there any appreciable result save that the pain was stayed. He had temporarily relieved a case of tic douloureux. Possibly it was the type (German) of radium he used, but its strength had been reported to be 1,200,000.

Dr. Abbe, in closing, said that he never had intended to suggest the matching of radium against the X-ray. He reported what he did simply for scientific and pathological interest.

Gastrostomy for Esophageal Stricture.—Dr. James H. Dunn, of Minneapolis, said that Dunham's device of string swallowing enables the operator to pass almost any stricture. Retrograde dilatation is not to be condemned, however. Its employment dates from the early days of Loreta's work. The operation is usually done in two stages because, as is well known, strictures soften from rest. The author considered Abbe's method combined with Dunham's as the safest and best. Dilatation should always be carried far beyond the normal size—the common instruments of the shops having no value because of their small size. He reported the results in three interesting cases.

Dr. Abbe said that even with Dunham's admirable device the combination of methods as suggested by Dr. Dunn seemed to him too complicated. The essential of the string operation is that the stricture must be put on tension, otherwise the twine will not cut. His first case, operated on twelve years ago, has had no recurrence, being to-day alive and well.

Dr. Dunn, in closing, said that he believed the indications for retrograde dilatation to be, first, when no filiform could be passed; second, in all difficult strictures which cannot be treated except by much difficulty from above. Many people have died as a result of ill-fated attempts to pass a dilator from above.

Removal of Upper Jaw for Osteosarcoma.—Dr. S. J. Mixter, of Boston, exhibited the photographs and radiograms of a case which was truly of amazing characteristics. The patient was a man who for the past six years had been confined in an attic room unable to venture abroad because of the frightful looks and nauseating odor of his whole face. The mouth was crowded into the neck—one eye was entirely destroyed by the growth. Its removal constituted a surgical triumph the like of which can seldom be seen.

A Contribution to the Surgery of Nerves.—Dr. Charles A. Powers, of Denver, said that his paper represented a none too satisfactory effort to bring the subject of nerve surgery up to date. Probably the very nature of the lesion and its after history, coupled with the fact that many papers had been written by Europeans and published in little known journals. In all he had been able to collect and study 56 cases. The bridging of defects by catgut and tubularization have both been shown to be equally faulty. In conclusion he said that it was hard to say what should be done; neuroplasty, bone resection or implantation are always at hand, transplantation should be abandoned and prognosis in every case should be most guarded.

Final Result in Secondary Suture of Nerves.—Dr. Emmet Rixford, of San Francisco, reported three cases which he had sutured six, four and two years ago, respectively. Ten weeks after severance of the ulnar he had sutured that nerve and in a year the functional result was perfect. The second case was that of a musculospiral paralysis also eight weeks after the primary injury. So much retraction had taken place that he was obliged to shorten the humerus. In six months function began and from that time on its return was wonderfully rapid. The third case was also sutured eight weeks after the primary injury. It was the facial and much of the mastoid had to be cut away before the ends could be found. Secondary suture differs from primary by being very much more complex, but its success, when accomplished, demonstrates that degeneration takes place whether primary suture has been done or not. He concluded that secondary suture is but little inferior to primary. A reasonable delay should not discourage from making an attempt to reunite the cut nerve, but in the case of a suppurating wound this should not be attempted until all signs of infection have passed, pus having a most deleterious action upon function restoration.

Dr. Willard said that, as in the case of bone transplantation so with nerves, a very young animal

should be used. Decalcified bone tunnels seem to guide the outgrowing nerves.

Dr. Powers, in closing, said that he recalled the case of a negro upon whom he had sutured the musculospiral. A very large keloid, which involved the nerve developed, necessitating reoperation. The result was perfect and continues so at the end of three years.

Operation for Primary Carcinoma of the Liver.—Dr. Leonard Freeman, of Denver, spoke of the rarity of the condition—the single growing nodule being, of course, the only one suitable for surgical intervention. In his case he had used the gauze strips to prevent hemorrhage and had found them to be satisfactory except when it came to removing them. This was accomplished in the end without difficulty.

Dr. W. W. Keen, of Philadelphia, said that the control of hemorrhage in these cases is the all-important consideration. He considers the cautery to be the most valuable aid at hand; it exposes the big vessels which may then be tied and at the same time destroys the small one.

Dr. L. L. McArthur, of Chicago, spoke of the difficulty of positively saying that a given enlargement was solitary. He had found the Mikulicz sack serviceable in controlling hemorrhage.

Dr. Freeman, in closing, said that in spite of Dr. Keen's good fortune with the cautery he would continue to use the gauze strips.

Third Day—June 16th.

Thyriodectomy for Exophthalmic Goiter.—Dr. Charles H. Mayo, of Rochester, Minn., said that over 1,400 books and monograms had been written on this subject, particularly upon its bearing on the question of internal secretion. Tachycardia he has come to consider the one cardinal symptom of the disease, but it may not appear until late in the course of the trouble. In the treatment of the condition the internist and the surgeon are drifting apart. Few cases are operated on until after they have submitted to years of unsuccessful medication. The opposing action of the thyroid and the suprarenal glands serve to maintain the equilibrium of the blood pressure. It is therefore not astonishing that the heart should early feel the change. As is well known, the two procedures now in vogue are thyroidectomy and section of the cervical sympathetic. He has used the X-rays in ten cases of goiter and, as should be expected from the known action of the ray on lymphatic tissue, they were much benefited. Of 128 operations on the thyroid, 40 were done for the relief of exophthalmic goiter. For anesthetic he has used cocaine, chloroform and ether, the last being preferable.

Thyroidism.—This symptom is so alarming because of its high fatality he considers due to absorption of wound serum—the area should therefore be as freely drained as possible and full quantities of salt solution should be given to prevent such absorption. Fifty per cent. of the 40 cases were entirely cured by gland resection; 25 per cent. were cured in time; 25 per cent. were improved. Belladonna should be exhibited before operation and no case in extremis should be accepted from the internist.

Dr. Ochsner, of Chicago, said that avoidance of pressure on the gland or rough manipulation of any kind whatsoever was to be avoided. Before attending to this detail he had lost two cases. The general anesthetic is not the cause of death, but it enables the surgeon to be rough—hence its danger.

Dr. Rixford, of San Francisco, said that he had operated on 12 or 14 cases without mortality. He always uses weak cocaine infiltration. One-half of his cases were drained—the remainder did just as well. All showed moderate rise of temperature. He considers thyroidism more common in the so-called primary goiter.

Dr. Mayo, in closing, said that too rough handling is engendered by a small incision; it should be made free.

Primary Splenomegaly; Splenectomy.—Dr. A. F. Jonas, of Omaha, reported a case which was of particular interest, first because of the rarity of the condition and second, because of the leaving in the abdomen one or more of the accessory spleens, five of which were found grouped about the pedicle. This is the twentieth case reported. At time of removal the hypertrophied organ weighed seven and one-half pounds.

Dr. Mixter, in closing the discussion of his case, said that it simply showed what could be done by taking desperate chances and by making use of osteoplastic flaps for the repair of defects.

Gall-stones in the Common Bile Duct.—Dr. S. H. Weeks, of Portland, reviewed the technic of the subject with special reference to diagnosis.

Dr. Richardson said that to his mind the essential of success in gall-bladder surgery lay in free and long-continued drainage. Brilliant results have been obtained by immediate closure, but this offers greater chance for disaster.

Dr. Rudolph Matas, of New Orleans, said that in most cases of fracture of the jaw the temporomaxillary joint need not be immobilized. He demonstrated a new form of intrabuccal splint which was characteristically ingenious. Since most of these fractures occur in adult males it is possible by having the buccal portion made of a malleable metal soft enough to mold, to use a single splint for an entire service. The apparatus he exhibited showed the tooth-marks of many patients on whom it had been used with admirable success. It combines the precision of an interdental plate with freedom from a dentist. The splint is not designed for simple cases which respond to simple conditions, but is meant to meet complicated conditions. It is so easy of application that anyone can apply it. The patient, once the splint is in place, may drink and speak much more freely than with any other form of splint and, what is of at least equal importance, free disinfection of the mouth is possible.

Dr. A. H. Ferguson, of Chicago, showed a patient on whom he had early last March done straight nephrotomy for the relief of chronic interstitial nephritis. The pathological examinations had been most carefully done—the urine showed granular and hyaline cast. Less urine, on catheterization, came from the left organ, so that was chosen for section. The renal pelvis was drained for eight days, and in eighteen days the output of urine had risen from 18 ounces to 60. One very interesting point in this case was the sudden feeling of relief which came to the man immediately after operation.

NEW YORK PATHOLOGICAL SOCIETY.

Stated Meeting, held March 9, 1904.

The President, O. H. Schultze, M.D., in the Chair.

Period of the Greatest Accumulation of Tetanus Toxin in Broth Cultures.—Dr. Cyrus Field read a paper on his experiments on this subject. In preparing toxin for the purpose of immunizing horses to tetanus,

he said that it was important to obtain as strong a toxin as possible, as there was then less volume of bouillon to inject. In preparing toxin for this purpose at the Research Laboratory of the Department of Health, it was the custom to grow the organism for nine or ten days in flasks holding about two liters of bouillon which had had 12 c.c. of normal NaOH solution added to it after having been made neutral to litmus. The bouillon was covered with a thick layer of paraffin about one-half to three-quarters of an inch thick. This sealed it off and gave a practically anaerobic condition. For every liter of bouillon about 20 c.c. of an old tetanus bouillon culture was added before the paraffin had hardened. The strength of this routine toxin was found to vary greatly, one week a $^1/_{1000}$ of a c.c. being the minimum lethal dose, perhaps the next a fiftieth or even a tenth. Thinking that perhaps it was the length of time for which the culture was grown, Dr. Field determined to take a sample of toxin from the flask each day and test its toxicity. For this purpose, alboline, which is a liquid paraffin, was used instead of paraffin to seal off the media. This permitted the introduction of a pipette and the drawing off of any amount of culture without disturbing its anaerobic condition. A sample of the culture was removed each day at the same hour, a portion being titrated to determine the degree of acidity and the rest passed through a Berkefeld filter; a portion of this filtrate was also titrated and the rest was used to make up the various dilutions for injection. Tetanus toxin is such an unstable compound that one has to determine its minimum lethal dose by making all the possible dilutions and injecting them at the same time, as the following instance will show. Having filtered two liters of a culture Dr. Field tested it and found that its minimum lethal dose at that time was $^1/_{500}$ of a c.c. The next day, it being needed for purposes of immunization, it was again tested before being sent to the veterinarian, and at this time the minimum lethal dose was $^1/_{50}$ of a c.c. The titration in all this work was done with a twentieth normal NaOH solution, phenolphthalein being the indicator. The method of determining the minimum lethal dose was as follows: The filtered bouillon was added to sterile water in various dilutions; for instance, on the first day five dilutions were made up, one c.c. of each containing respectively $^1/_{10}$, $^1/_{25}$, $^1/_{50}$, $^1/_{100}$, and $^1/_{250}$ of a c.c. of the bouillon culture. One c.c. of a dilution was injected into the muscles of the hind leg of a three hundred gram guinea-pig. If the pig died in four days with symptoms of tetanus poisoning he was considered to have received a fatal dose of toxin, so that the pig dying from the effect of the highest dilution was considered to indicate the minimal lethal dose of that toxin. As will be seen, it required a large number of guinea-pigs to carry out the testing of a culture in this manner. The acidity of the unfiltered sample was always much higher than that which had been drawn through the Berkefeld filter, Dr. Field's explanation for this being that the bouillon which had not been filtered contained a great amount of sulphureted hydrogen which is one of the gases formed by the tetanus bacillus in its growth. This gas is acid in its reaction. When the bouillon was drawn through the Berkefeld filter it entered a vessel from which most of the air had been exhausted, and therefore any gases which might be held in solution were rapidly drawn out of the bouillon. When this gas is sulphureted hydrogen, giving the bouillon an acid reaction, there was naturally a great lessening in the degree of the acidity after it had passed out. To determine whether or not this explanation would hold, Dr. Field took some water which contained large quantities of sulphureted hydrogen, and determined its degree of acidity. It was found to require 3 c.c. of a twentieth normal NaOH solution to neutralize it. This was passed through a Berkefeld filter into a vessel in which the air had been exhausted, and was allowed to remain there five minutes. It was again withdrawn and its acidity determined. This time only 2.2 c.c. of the same solution were required to neutralize it. Tetanus toxin remained in a vacuum much longer, as a rule, than five minutes, so it would seem that the high acidity in the unfiltered sample was due to the bouillon containing a large quantity of sulphureted hydrogen in solution.

Dr. Field's conclusions drawn from this work were as follows: (1) On the average the best results will be obtained if the culture be grown only six or seven days in the incubator and after filteration be kept in the ice-box. (2) No toxin should be used after fourteen days have elapsed from the date of inoculation. (3) As a rule, the degree of acidity of the unfiltered bouillon varies directly as the amount of toxin formed, but sufficient work has not been done to permit any definite statements.

Dr. Field said that at some future time he intended to test the effect of the toxin before filtration to see if it, too, was affected in any manner by the vacuum, and also to test the power of an old, reduced toxin to neutralize tetanus anitoxin.

Calcified Thrombus of the Inferior Vena Cava.—Dr. George P. Biggs presented this specimen. He said the patient from whom the specimen was obtained was unconscious when admitted to the hospital, and died three days later without giving any history. He was a well-nourished man, an engineer, aged sixty-one years; a native of the United States. At post mortem the immediate cause of death was found to be fracture of the skull with extensive cerebral laceration. The vessels at the base of the brain were very sclerotic. Fibrous puritic adhesions were numerous. Left ventricle of the heart hypertrophied. Valves normal in structure; but there was relative aortic insufficiency. The entire arch of the aorta was uniformly dilated to a diameter of about 5 cm. and its wall very much thickened, measuring 6 to 10 mm. The enlarged arch made moderate pressure on the right auricle, superior vena cava, trachea, and pulmonary artery. Sclerotic changes were marked throughout the aorta and there were numerous areas of calcification. Spleen was normal in size and consistency, but firmly adherent to surrounding organs. Right kidney larger than normal, left slightly smaller than normal; both presenting similar lesions aside from variation in size; viz., moderate chronic nephritis with numerous small cicatrices.

Microscopical examination showed moderate amyloid degeneration of kidneys and spleen. Liver normal in size and general appearance except for a few small cicatrices. The foregoing lesions are mentioned chiefly because of their strikingly syphilitic nature and manifestations.

The nature of the specimen demonstrated by the speaker was not appreciated until after its removal from the body, and changes in the circulation could not be accurately determined. Distinct enlargement was, however, noted, in the azygos, iliac and renal veins.

The inferior vena cava from its beginning up to the level of the renal veins was completely occluded constituting a hard, absolutely rigid column firmly adherent to the aorta. The diameter of the vena cava is one and one-half to one and three-quarters cm. In the center of it is a small, calcareous rod-like portion, one-half to three-quarters cm. in diameter, extending throughout. The balance of the structure is chiefly fibrous tissue, all traces of the thrombus having been replaced thereby. One naturally thinks of the syphilitic character of some of the other organs in connection with the etiology.

Case of Unilateral Thrombosis of Cerebral Veins.—The following condensed record of this case is of interest, partly because of inability to harmonize the symptoms with the lesions. The patient was a male, aged twenty-seven years, a native of Ireland, single, mattress maker. He gave a history of syphilis four years ago. Moderate drinker. Two weeks ago noticed weakness and anorexia. Pain in right axilla; general aching pains. After five days was able to be out. One week before admission had a severe chill followed by fever and pain on right side. Cough with mucopurulent expectoration, later becoming blood-tinged. Signs of consolidation in the lower part of the right upper lobe and apparently in the upper part of the right lower lobe. On the third day after admission he looked septic and it was suspected that there might be some pus in the right pleural cavity. A needle was inserted with negative result. Immediately following this aspiration, the patient became pale, pulse imperceptible, respiration labored. After stimulation, considerably improved. On the same day there is an entry on the chart of slight nystagmus of the left eye. At 5.30 the same afternoon the nurse reported a right-sided convulsion lasting about two minutes. On the following day (the fourth day after entrance to the hospital), another slight right-sided convulsion, lasting about half a minute. On the fourth day of the man's stay in the hospital it was recorded that since the previous afternoon the patient had been unable to move the right arm or the right leg, or left side of the face. The right arm and leg were rigid. Knee-jerks seemed more active on the right than on the left side. Patient semi-comatose. On the morning of the fourth day, it was impossible to make the patient move the left arm or the left leg; the right side of the face was movable. On the fifth day, the left side of the body was only slightly rigid, and the left hand responded to stimulation. On the sixth day, patient moved both arms on irritation. Pulse weak, respiration labored. Died on the seventh day after admission, two weeks after definite chill with pneumonic symptoms. Temperature 104° F. on admission, inclined to become lower, reaching as low as 100° F. the day before he died, rising the night before death to 104° F. Respiration varied from twenty-four to thirty-six. Leucocytes, 13,800. Embolism was thought the probable explanation of the cerebral symptoms.

At autopsy numerous old adhesions were found over the liver, also pleuritic adhesions on both sides. Heart normal, except that the aortic cusps presented a slightly roughened appearance suggesting acute endocarditis, although the lesion was not marked, also a nodular area of thickening of one of the cusps, three mm. in diameter. After the pulmonary vessels of the right lung had been opened very freely with scissors, three small portions of ante-mortem thrombi were found. Their origin could not be determined but they must have been loosely attached in some branch of the pulmonary artery or vein. No other thrombi were found in the lungs. There was considerable bronchopneumonia of the right lung, particularly in the region in which the physical signs had been heard, and also fairly extensive chronic interstitial pneumonitis of the right lung. A small area of obsolete tuberculosis was found in the right apex. In the kidneys there was parenchymatous degeneration with a few hyaline casts in the tubules of the pyramids. The most noticeable lesions after the removal of calvarium and dura were areas of diffuse hemorrhage of the pia over the right hemisphere, adjacent to and extending a distance of about 4 cm. from the great longitudinal fissure. There were no clots of blood. Veins over the right hemisphere were distended and in contrast with those over the left hemisphere. Convolutions on both sides were moderately flattened.

Having in mind the possibility of emboli or thrombi at the base of the brain, very thorough search was made, the vessels being carefully watched as they were severed and after removal of the brain by careful dissection. There was absolutely no trace of thrombi or emboli. The right Sylvian artery did not appear to be especially engorged and there seemed to be nothing especially noticeable about the arterial supply as far as the large vessels on the right side of the brain were concerned. On opening the longitudinal fissure a parietal thrombus was seen loosely attached to the right wall. It was 3 cm. in length and located midway between the anterior and posterior ends of the sinus. The terminal ends of the right cerebral veins emptying into the sinus in the region of thrombosis contained occluding thrombi, one cm. in length. Beyond the thrombi the veins were distended with fluid blood. These thrombi corresponded with areas of hemorrhage noticed in the pia. Parietal thrombi were found in each lateral sinus, also. Apparently nearly all of the right hemisphere above the level of the roof of the lateral ventricle was softened, but much of this must have been the result of pronounced edema as the appearance of the hardened specimen does not bear out the original impression. Softening is limited to the regions of hemorrhage, most of which correspond with hemorrhages in the pia. These areas of cerebral hemorrhage associated with evidences of softening have a curious outline, often following the irregularities of the cerebral surface as a cortical zone 3 to 7 mm. in thickness. Depth of involvement thus depends partly upon the depth of the sulci. These areas of hemorrhage are entirely in the right hemisphere, chiefly near the great longitudinal fissure. They are 1 to 3 cm. in diameter, and the intervening tissue is fairly normal. No evidences of such lesions are seen in the left hemisphere.

The microscopical appearances of the cerebral tissue are very confusing. In the first place there are evidences of a probable syphilitic lesion in the form of hyaline degeneration of some of the vessels. Then there are other vessels in the regions of softening and hemorrhage, which are occluded with thrombi, some of them fibrinous, some rich in leucocytes. In some instances the perivascular spaces are filled and the surrounding tissue infiltrated with small round cells; in other instances there is no infiltration of surrounding tissue. The inflammatory infiltration is a marked feature in many parts of the involved tissue. Hemorrhages are very numerous, at times very closely related to the thrombosed vessels and at other times hemorrhages are found about vessels which show no distinct lesion. In places, chiefly in the sulci, the pia shows slight round cell infiltration and endothelial proliferation. The question naturally had arisen as to the correct explanation of the lesion. Grossly, the only demonstrable interference with circulation was in the cerebral veins where it was very distinct as shown by the engorgement of the veins beyond the thrombi. The arteries, so far as it was possible to trace them by dissection, did not contain thrombi or emboli, and none have been found in the sections. Dr. Biggs wished very much to have some expression of opinion as to the sequence of events and nature of the lesion.

Aneurism of the Aorta.—Dr. Francis C. Wood presented this specimen. He said that as a rule pathological specimens were not interesting on account of their size; but he had an opportunity of removing a large aneurism from a patient which had excited some interest, and he thought the members of the Society might like to see the extent to which such a growth

might develop. It had been removed from a large and powerfully built man, about forty years of age, who had entered St. Luke's Hospital with an aneurism which had already eroded one of the ribs. He had symptoms of aneurism and the history of syphilis which so often goes with it. He was supposed to be in a dangerous condition, so much so that upon asking for an X-ray picture it was said that the man was moribund and could not have the picture taken. He survived this moribund condition, however, for four months, and was a comfortable, cheery member of the hospital wards. As the aneurism grew larger, it did not seem to produce much discomfort. At the time of autopsy, it projected forward four inches from the anterior surface of the right chest. It seemed as if it would burst at any moment. It had eroded the border of the sternum and extended to the axilla. The ribs were eroded from the first to the seventh and were included in the mass. The lung was laterally compressed, and the pleural cavity contained a small amount of blood where the aneurismal sac leaked. There were also small hemorrhages under the muscles of the chest. The heart had remained comparatively small for so large and powerful a man. The opening of the aorta into the aneurism was closed by a clot. The patient had practically undergone a spontaneous cure, as very little blood could be obtained from the aneurismal sac. In a few weeks he might have recovered.

Primary Epithelioma of the Bronchus.—Dr. O. H. Schultze presented specimens from a case that was diagnosed clinically by Dr. I. Adler as Primary Endothelioma of the Lung. He was indebted to Dr. Maurice Packard, who treated the case, for the clinical history. The patient was a male, fifty-four years old; single; cigar-maker; an inveterate smoker. Family history of arteriosclerosis; no evidence of tuberculosis, syphilis, or alcoholism. Two years before he had had a cough which though alleviated by treatment had never entirely left him. There were no night-sweats; no loss of flesh or strength; no hemoptysis at this time; no dyspnea. The cough during the last two years had gradually become worse and about eighteen months before had been accompanied with profuse mucous expectoration. Dyspnea had become very troublesome and he suffered from pain localized in anterior right side of chest and increased on deep breathing. Sputum was examined for tubercle bacilli with negative result. He was sent to the South but as he did not improve he returned. The cough became more distressing and on many occasions a considerable amount of blood, as much as a cupful, was brought up. Even after these hemorrhages he did not lose weight, nor was his temperature higher than normal. There was flatness on percussion over upper and anterior part of right side of the chest and the veins over this region were prominent. Death occured suddenly with profuse hemoptysis.

Autopsy.—The right pleural sac contained about one quart of blood-stained serum. The anterior surface of the right upper lobe was intimately adherent to the costal pleura which was removed with it. Larynx, trachea, bronchi, lungs, heart and vessels were removed together. A firm tumor, 5 by 3 cm., involved the posterior wall of the right bronchus, the bifurcation of the trachea, and the beginning of the left bronchus. The bronchi, especially the right, were partially stenosed and ulcerated. Immediately below this mass a bronchial lymph-node about 1.5 cm. by 3 cm. was found almost completely infiltrated with new growth. The growth extended along the bronchi into the right upper lobe to its anterior and internal surfaces, where the pleura was intimately adherent to the pericardial sac. Dense infiltration of the growth surrounded the pulmonary vein and the superior vena cava. The lumen of the superior vena cava and that of the pulmonary vein presented mere dimples with radiating longitudinal folds of the vessel wall when viewed from the auricles. The lumen of the right pulmonary artery was narrowed to 5 mm. Sections of the growth throughout the lung were firm with the exception of areas of erosion into the bronchi, evidently the source of the hemorrhage. The middle lobe presented firm consolidation of yellowish white color and flat on section. There were scattered small metastases in the pleura and about the bronchi of the right lower lobe which was compressed by the fluid in the pleura, in the pleural surface of the diaphragm and throughout the left lung. A few isolated metastases up to 5 mm. in diameter were found in a "horseshoe" kidney. The microscopical sections presented showed the same structure throughout, variously shaped islands and strands of cells without intercellular substance, imbedded in a stroma of dense fibrous connective tissue. In these islands the outer cells were polygonal with large vesicular deeply staining nucleus and basophilic protoplasm. Towards the center the cells became flatter, stained more distinctly with eosin and their nuclei stained lighter with hemotoxylin. Concentric arrangement of these flattened cells were indistinct in many places. With Weigert's stain granules and plates of keratohyalin were found. In many islands and in the small metastases, the outer cells presented evidences of growth and infiltration of the surrounding tissue while the inner cells showed progressive loss of structure, coagulation necrosis. The ulcerated surface of the tumor in the wall of the bronchus presented a hemorrhagic granulation tissue. Smooth muscle fibers of the wall of the bronchus could be traced through the tumor.

Adrenal Tumor with Metastases.—Dr. Schultze also presented these specimens. The patient from whom the specimens were obtained, a man fifty-two years of age, had died in Gouverneur Hospital forty minutes after admission. He was suffering from intense dyspnea, no pulse could be felt, and he presented signs of edema of the lungs. The immediate cause of death was excessive edema of the lungs, dilatations, and fatty degeneration of the heart, due to secondary pernicious anemia in turn dependent upon malignant new growths. The left adrenal presented a tumor occupying nearly the entire organ which was symmetrically enlarged to four times its normal volume. The right kidney was almost entirely replaced by a large growth, in volume nearly eight times that of the normal organ, only a small portion of the organ being recognizable. The growth extended through the renal vein into the inferior vena cava, distending it to twice its normal size, as far as the liver. The pelvis, ureter and bladder contained blood clots. The lower epiphysis and adjoining portion of the shaft of the right femur was increased in size to four times the volume of the left. Absorption of bone had advanced to such a degree that the mass was easily broken from the rest of the shaft, and sections through the mass were readily made with the knife. Numerous isolated metastases were found in pulmonary pleura and about the bronchi also in the left kidney.

Microscopical slides from all the growths were presented. The structure showed a reticulum of thin-walled capillaries, the spaces occupied by large polygonal cells whose nuclei stained intensely, the protoplasm very faintly. In the adrenal, kidney, and femur, numerous giant cells were found with central, close arrangement of the nuclei, probably produced by agglutination of cells. In the metastasis in the vena cava, the cells were compressed and fusiform and the vascular reticulum was less distinct. The structure corresponded to that

of the adrenal cortex. The tumors have been described in the adrenal as struma adrenalis or suprarenalis in the kidney, and elsewhere as hypernephroma, adrenaloma, or perithelioma. The kidney tumor might have originated from an embryonal adrenal rest.

Intraperitoneal Hemorrhage from Adenocarcinoma of the Liver Secondary to Adenocarcinoma of the Gall-bladder.—Dr. Schultze also presented slides from this case. The patient, a laborer, forty-three years of age, had died suddenly twelve hours after admission to Bellevue Hospital. Dr. Samuel A. Brown had kindly furnished the following clinical notes. The patient had lost thirty-eight pounds during the last three months. One month before admission it was noticed that his eyes were yellow; the condition was progressive with emaciation, weakness, and loss of appetite. Five days before admission he began to have acute pain on the right side over the liver, increased on pressure and on taking a deep breath. Temperature on admission, 101° F.; signs of cardiac insufficiency and acute perihepatitis. While on bed-pan, endeavoring to defecate, he toppled over and died within an hour.

Autopsy.—Two quarts of blood found in the peritoneal cavity. The source of the hemorrhage was found in a laceration of the capsule of the liver communicating with a large hemorrhagic and softened metastasis. The liver was considerably increased in size and filled with numerous large metastases, hemorrhagic and softened. The superior surface of the gall-bladder was intimately adherent to the liver and presented a papillary growth on its mucosa, infiltrating its walls and the liver. The retroperitoneal lymph-nodes about the head of the pancreas, pylorus, and hilus of liver were considerably increased in size, infiltrated by new growth, hemorrhagic and softened. The retroperitoneal connective tissue was infiltrated with blood, pushing the pancreas forward. The entire mass was about the size of a man's hand. The pancreas was normal. Microscopical slides of the primary tumor and metastases were presented. The structure was that of adenocarcinoma with high columnar cells, in places arranged in tubules, in others irregularly infiltrating the surrounding tissue. Extensive necrosis and hemorrhage were apparent.

Dr. Noyes said that three or four years ago he had presented to the Society a large tumor of the liver of adenomatous nature which, when put under the microscope, proved to be nearly identical with suprarenal gland tissue. It had caused some discussion and a marked difference of opinion, some of the members believing it to be simple ordinary adenoma, others believing it to be metastatic deposits of the ordinary cells of the suprarenal gland in other organs; but the speaker thought it identical with the specimen shown by Dr. Schultze. It was one very large tumor mass which, seen in the specimen alone, would have been taken for suprarenal capsule if it had not been known where it came from. No primary growth was found in the suprarenal gland.

Dr. Harlow Brooks said that it was most interesting to study these cases and to try to find out what primary tumors of the lung were and where they started. He had studied three cases of so-called primary endothelioma of the lung, two of them so named with his half-hearted consent, and one with his vigorous opposition; he was absolutely sure this one was carcinoma. He thought these cases were too frequently called endothelioma because they were primary tumors of the lung; and perhaps this was because the best work in this line had been done by a man who believed in endothelioma with all his heart. He had been glad to hear Dr. Schultze's explanation of this tumor. Dr. Brooks said it was necessary to consider in primary tumor of the lung the embryological epithelium from which the lung is developed—air sacs—derived from a type of epithelium—endoderm—which does many curious things, as in the intestine, liver and other organs similarly derived. When one comes to the new growths, such as endothelioma, it must be remembered that tumor cells are to be dealt with, which, from an embryological standpoint, are apt to produce very variable tissues even in the normal. Dr. Brooks did not think the average primary tumor of the lung was an endothelioma, but he was not prepared to say all were not endothelioma.

Dr. Biggs asked as to the experience of others in regard to the malignancy of hypernephromata. Personally he had never seen metastasis or recurrence and he was inclined to give a favorable prognosis if the tumor were sharply outlined and not large.

Dr. Schultze said that in a case at Mt. Sinai Hospital of a pulsating tumor of the ilium diagnosed clinically as aneurism, exploratory incision revealed a mass containing blood. The microscopical diagnosis made by Dr. Mandlebaum was perithelioma. Such metastases of hypernephroma in bone were not so frequent. Struma suprarenalis (hyperplasia of adrenal cortex) he considered not so uncommon if the adrenals were systematically examined. Hypernephroma of the kidney was occasionally found, apparently having no connection with the cause of death.

Dr. Brooks said that he had had two cases last year; one in the Montefiore Home and one in the Fourth Division of Bellevue. The first was diagnosed ante mortem and showed the extremely rare metastases in the corpora cavernosa. He did not think them so uncommon if one looked out for them.

Dr. F. C. Wood said that he had seen a tumor of this type removed from a patient at St. Luke's Hospital. The tumor had occupied the upper lobe of the kidney and was of very considerable dimensions and filled with fluid blood. The inner surface of the tumor was covered with a shaggy mass of new growth. Evidently there had been a hemorrhage in the substance of the tumor with consequent destruction of the cells and the formation of the cyst. The patient had gone five years without a recurrence.

Dr. Schultze said that it seemed strange that the case with the adrenal metastasis in the inferior vena cava had not shown more marked effects of interference with circulation.

BOOK REVIEWS.

The Eye, Its Refraction and Diseases. By Edward E. Gibbons. The Macmillan Company, New York.

It may occur to some who have approached the domain of optical science through the practice of medicine that only a few of the books whose subject-matter is described by the above title, have given sufficient relative importance to that part which is devoted to refraction; the optical matter being often much curtailed or perhaps written in by some one whose name does not appear on the title page and whose interest in the book is a matter of rather secondary importance.

To say that the author of this volume has in no way underestimated the importance of the optical side of the subject is to very much understate the case. The whole book is Physiological Optics pure or applied from beginning to end. The author justly refers to the optical inadequacy of the ordinary text-book as a sufficient reason for the production of this. But the subject-matter of the book deals so little with diseases of the eye in the ordinary acceptation of the term that one wonders why the word disease appears on the cover or

the title page. This criticism is not made in a fault-finding way but merely to call attention to the fact that the diseases referred to are in general not of the inflammatory type. One can hardly find fault with the classification that places refraction anomalies and muscular insufficiencies under the head of disease, but a treatise on diseases of the eye which includes no other kind and makes no apology or explanation for the omission might be very disappointing to one who thought to read its character from its title page.

The first seventy-five pages of the book are occupied with geometrical optics, including the theory of lenses and optical systems, according to Gauss. The author has succeeded admirably in giving just about that amount of mathematical work which is found necessary and sufficient for a brief but accurate presentation of the subject. Illustrative examples are given from the eye itself, so that one acquires in the reading a familiarity with the dimensions and constants with which he is to be subsequently concerned. After this, in somewhat logical order, come those matters which should find place in a text-book introductory to Physiological Optics. At the same time the situations that must be met by the refraction-optician and oculist are presented and most of the known methods of procedure described. The book is not exhaustive but it is wise and is probably about as good as could be presented to the particular class of readers for whom it was written. The courtesy of the instrument maker has helped out a good deal with the illustrations. The letter press is good and the algebraic and geometric parts are as free from misdrawing and printers' errors as could be expected in a first edition.

TEXT-BOOK OF OPHTHALMOLOGY. By Dr. CHARLES H. MAY (Grundriss der Augenheilkunde, von Dr. Charles H. May, Chef der Augenklinik, med. Abteilung, Columbia Universität, New York. Autorisierte deutsche Ausgabe für deutsche Studierende und Aerzte. Bearbeitet von Dr. E. H. OPPENHEIMER. Verlag von August Hirschwald, Berlin.

MAY's excellent book has been given the compliment of a German translation, and in its new guise compares very favorably with any of the smaller German books that we have seen. It is not essentially different from the English edition which has been favorably commented upon in these columns. We trust it will have a successful career.

WILLIAM PEPPER, M.D., LL.D. By FRANCIS NEWTON THORPE. J. B. Lippincott Company, Philadelphia and London.

IN the general news columns of this publication, a few weeks ago, mention was made of a Life of Dr. William Pepper, late Provost of the University of Pennsylvania. Since that time a copy has come to hand and has been perused with an increasing delight. The biographer is Mr. F. N. Thorpe, concerning whose experience in this difficult form of authorship the reviewer has no knowledge. Suffice it to say that he seems to have his subject well in hand and deals fairly not only with the personality of his sketch but with the medical profession as a whole. So often are the lives of great men held in the balance of extreme prejudice or equally extreme admiration by the authorized reviewer that one must be prepared to take either praise or blame *cum grano salis* and decide for himself as to the real character of the individual, in the light of cold impartial analysis. This fact was known to no one better than to Carlyle, yet as a biographer he will never stand preeminent because of his excessive and almost unavoidable prejudices, and, strange to say, that he, too, has suffered most reprehensibly at the hands of those who, while claiming to know him so well, really understood his eccentricities so ill.

The subject in question, however, must have presented a different problem to his essayist, for if the life of any prominent man is ever intimately known to the general public, here is a case in point. Dr. Pepper was truly a man of works, but he was also a man of faith, combining well the qualities which the Biblical paragrapher laid down as indispensable. He belonged to that strictly limited class of men which Emerson was pleased to call "representative"—representative because of his greatness of heart and mightiness of mind. Standing at the head of his profession in America, he was a pioneer among those who have compelled the respect of foreigners and have made known unto all nations the breadth of vision and sincerity of purpose so characteristic of American effort in the field of medicine and surgery. But he was more than a physician, more than a mere teacher in a great school; he was also a man of affairs. His life work finished at fifty-three, it is remarkable how much he accomplished in all lines of activity during that short period of time. The list of municipal affairs with which he was prominently identified is a long one, and to name the acts of kindness performed to individuals who happened under his care would be impossible even for himself were he living. Perhaps more impossible for himself than for anyone else; for seldom were his alms done in public, and never with the hope of attracting attention, a rule which many philanthropists of to-day seem to neglect in bestowing their benefits.

This life, then, is one worthy of study by all aspiring members of the medical profession. As recorded in the volume lying before the reviewer, it is worthy of a prominent place among those books which are loved best and read most often.

HOW TO ATTRACT AND HOLD AN AUDIENCE. A Popular Treatise on the Nature, Preparation and Delivery of Public Discourse. By J. BERG ESENWEIN, A.M., Lit.D., Professor of the English Language and Literature in the Pennsylvania Military Cottage. Hinds & Noble, New York.

IT has often been said that physicians, as a rule, fail much more than other professional men, to make any proper impression when called upon to speak in public. This little book, which gives some practical hints with regard to the making of addresses, may then be of use. It is meant rather for the public speaker who makes public speaking a business, but it can well serve the purpose of the man who makes only an occasional address and in these later days, physicians are being called upon more and more to express themselves before public audiences on such popular medical questions as regard sanitary regulations and medico-educational problems. The book is especially valuable for its directions with regard to the avoidance of mannerisms that so often make the untrained speaker a source of discomfort rather than of pleasure to his audience.

DISEASES OF THE NERVOUS SYSTEM. By H. OPPENHEIM. Second American edition. Translated and edited by EDWARD E. MAYER, A.M., M.D. J. B. Lippincott Company, Philadelphia and London.

OPPENHEIM'S LEHRBUCH has represented the best of the German text-books of neurology and in its present second American dress it will find many old friends and gain, we hope, a number of new ones. The present edition represents the third German edition, published only last year. Of the general scope of the work it is not necessary to speak. In its 953 pages it tells all that

the practitioner of medicine needs to know about nervous diseases, and tells it very well. We can cordially recommend it, particularly to the inmates of sanitaria and institutions where nervous cases congregate and usually are so little studied.

Adolescence, Its Psychology and Its Relations to Physiology, Anthropology, Sociology, Sex, Crime, Religion, and Education. By G. Stanley Hall, Ph.D., LL.D., President of Clark University and Professor of Psychology and Pedagogy. Two volumes, 8vo. D. Appleton & Co., New York.

Encyclopedia of youth it might well be called. Encyclopedic it is in its information concerning the years which immediately precede and follow puberty. No period of life equals in practical import that of adolescence; yet the results of the investigation of it have been hitherto scattered and inaccessible. The teacher, the physician, the parent, the student of social problems has long asked in vain for such a work as Dr. Hall now gives us. Beginning with growth in height and weight, the normal curves are established and the significance of variations from them pointed out. The growth of parts and organs, of motor power and function are taken up with elaborate detail.

The chapters on adolescent diseases of body and mind, on juvenile faults, and on sexual development, its dangers and hygiene, are those of greatest practical medical interest. Ordinarily, the physician's militant criticism of writings on these subjects by laymen is justified. But in these chapters the present author shows himself conversant with the most advanced scientific thought, and has adopted opinions of his own of rare sagacity.

The second chapter concerns itself with the more purely psychological characteristics, such as love, attitude toward nature, social instincts, intellectual education, etc.

The book is evidently the product of years of wide reading and of acute observation. Behind it all is the philosophic purpose to establish genetic ideas of the soul which marks an extension of evolution into the psychic field.

A Manual of Clinical Diagnosis, by Means of Microscopical and Chemical Methods, for Students, Hospitals, Physicians and Practitioners. By Charles E. Simon, M.D. Fifth edition, thoroughly revised and enlarged. Lea Brothers & Co., New York and Philadelphia.

Dr. Simon's book well merits the popularity which it has achieved and which brings it to its fifth edition in eight years. Some idea of how carefully the book is brought up to date may be gathered from the additions made to the present volume. A new section, for instance, deals with the cryoscopic examination of the blood; a section had been added on paratyphoid fever and on gonococcus septicemia, as well as on bubonic plague and spotted fever. Now that animal parasites are attracting so much attention, new matter has been very seaonably added with regard to the various intestinal parasites and a special section has been devoted to trypanosomiasis. The colored plates in this edition would seem to come as near being absolute pictures in their natural colors of phases of blood work as it is possible to procure.

It is an encouraging feature of the present state of medical literature in this country to find that Dr. Simon's book is so thoroughly appreciated. The appreciation is a deserved tribute to unceasing watchfulness in keeping his work so closely in touch with real progress in practical medicine that it is a mirror of the condition of clinical diagnosis at the time of each revision and will undoubtedly, as such, prove a precious landmark for those who in the future will want to trace the introduction of various new methods into medical teaching.

BOOKS RECEIVED.

A Guide to the Clinical Examination of the Blood. By Dr. R. C. Cabot. 8vo, 550 pages. Illustrated. Wm. Wood & Co., New York.

Annual Report of the Surgeon General Public Health and Marine Hospital Service. 8vo, 572 pages. Illustrated. Washington, D. C.

The Mother's Manual. By Dr. Emelyn L. Coolidge. 12mo, 253 pages. A. S. Barnes & Co., New York.

Clinical Microscopy and Chemistry. By H. Lenhartz. Translated by H. T. Brooks. 8vo, 412 pages. Illustrated. F. A. Davis, Philadelphia.

Die Buchführung im Apothekenbetriebe. By Drs. J. Barber and V. Schestauber. 8vo, 72 pages. Illustrated. A. Hartleben, Vienna and Leipsic.

Roentgen-Ray Diagnosis and Therapy. By Dr. Carl Beck. 8vo, 460 pages. Illustrated. D. Appleton & Co., New York.

Compendium of Chemistry. By Dr. C. R. Arnold. Translated by Dr. J. A. Mandel. 8vo, 627 pages. John Wiley & Sons, New York.

Preliminary Bulletin on Insects of the Cacao. 58 pages. Illustrated. C. S. Banks, Manila.

A Manual of Materia Medica and Pharmacy. By Dr. E. S. Muir. Third edition. 8vo, 190 pages. F. A. Davis, Philadelphia.

What We Owe to Experiments on Animals. By Stephen Paget. 12mo, 72 pages. Scientific Press, London.

A Case Against Antivivisection. By Stephen Paget, 12mo, 104 pages. Scientific Press, London.

Materia Medica, Pharmacology and Therapeutics. By Dr. C. D. F. Phillips. Third edition. 8vo, 921 pages. Longmans, Green & Co., New York and Bombay.

Bericht über 137 Gallensteinlaparotomien. By Dr. Hans Kehr. 8vo, 315 pages. J. F. Lehmann, Munich.

Der Einfluss von Boden und Haus auf die Häufigkeit des Krebses. 8vo, 146 pages. J. F. Lehmann, Munich.

A Practical Treatise on Medical Diagnosis. By Dr. J. H. Musser. Fifth edition revised. 8vo, 1213 pages. Illustrated. Lea Brothers & Co., New York and Philadelphia.

Transactions of the American Climatological Association. 8vo, 264 pages. Illustrated. Philadelphia.

Le Malattie Dei Paesi Caldi. By Dr. C. Muzio. 12mo, 560 pages. Illustrated. Ulrico Hoepli, Milan.

Elettricita Medica. By Dr. A. D. Bocciardo. 12mo, 201 pages. Illustrated. Ulrico Hoepli, Milan.

La Rachitide. By Dr. P. Mancini. 12mo, 300 pages. Illustrated. Ulrico Hoepli, Milan.

Treatise on Diseases of the Skin. By Dr. H. W. Stelwagon. 8vo, 1014 pages. Illustrated. W. B. Saunders & Co., New York, Philadelphia and London.

Burdette's Hospitals and Charities. 1904. By Sir Henry Burdette. 8vo, 1029 pages. The Scientific Press, London.

Pediatrics. By D. H. E. Tuley. 12mo, 266 pages. Illustrated. Lea Brothers & Co., New York and Philadelphia.

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ORIGINAL ARTICLES.

THE RELATIONS OF SURGERY TO THE RECENT ADVANCES IN THE KNOWLEDGE OF THE PANCREAS.[1] [2]

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THE subject of pancreatic surgery is already so broad that I can only speak at length of certain phases of it, briefly referring to some of its other aspects. As compared with the surgery of the gall-bladder and appendix, that of the pancreas has certain natural limitations which our present knowledge of it has imposed or helped to remove.

I. On account of its physiological importance, we cannot remove the pancreas with impunity, as we can the gall-bladder and appendix. Von Mering and Minkowski showed that in dogs complete extirpation of the pancreas was invariably followed by symptoms of a fatal diabetes. Thus we cannot by a radical extirpation prevent the recurrence of a pancreatitis as occurred, for instance, in Halsted's case.

The same experimenters found that if a small portion of the gland remains, whether connected with the duct or not, there is no glycosuria until that portion atrophies. Hence, with few exceptions, tumors of the pancreas may be removed without immediate danger of diabetes, but the difficulties of the technic often contraindicate the operation. The lack of pancreatic secretion in the intestines can be supplied by administering pancreatin, but we cannot supplement the internal secretion.

The experiments of Herter in reference to the inhibition of pancreatic diabetes, after extirpation of the pancreas, by removal of the adrenals or ligation of their arteries, suggested the possibility of such removal or ligation to prevent diabetes after operations on the pancreas, or even to cure an established diabetes. But apparently the operation on the adrenals to be effective must precede the extirpation of the pancreas and even then the effect is probably not permanent.

Even incision into the pancreas has its dangers or harmful results, for not only may the hemorrhage, which is often abundant, be difficult to control, but the leakage of secretion may cause (1) a lack of peritoneal adhesions, leading to peritonitis, (2) a fat necrosis of the subperitoneal fat, (3) a chronic fistula with irritation of the surrounding skin. I have had such a case of fistula following the exploration of a carcinoma of the head of the pancreas, but have known of excision of a fragment for examination to be followed by no bad results. The trauma of an incision of the pancreas or an operation on it, radical or exploratory, may be sufficient to cause pancreatitis.

II. The topography of the pancreas, situated so deeply in the upper part of the abdomen, hinders the development of the diagnosis as well as the operative treatment of pancreatic disease. Several points in the anatomy of the pancreas have been studied or emphasized in recent years. Opie found that the duct of Santorini, though always present, could not act as an accessory outlet to the duct of Wirsung in 34 out of 100 cases, on account of the small size or absence of one or the other end. He also called attention to the relation of the pancreatic duct to the diverticulum of Vater, from which it follows that a stone of small size, impacted within the diverticulum, may completely occlude its outlet without occluding the opening of the pancreatic duct. Such an impaction of a biliary calculus prevents the outlet of bile, which is often infectious in such cases, but favors its passage into the pancreatic duct, especially if the gall-bladder is capable of contraction, thereby raising the pressure in the bile duct. The association of pancreatitis with cholelithiasis has been noted by a number of writers and it has been caused experimentally by injecting bile into the pancreatic duct. Moreover, in an autopsied human case of pancreatitis, Opie found a stone impacted in the diverticulum of Vater, causing a back flow of bile into the pancreatic duct as shown by the staining of the latter.

While this explanation of the etiology of many cases of pancreatitis does not assist the surgeon in operating when once the inflammation exists, it suggests another reason for the more general operative treatment of cholelithiasis as a prophylactic measure.

Besides the transperitoneal routes of reaching the pancreas through the gastrohepatic or gastrocolic ligaments or the mesocolon, the topography of the gland has more recently suggested the retroperitoneal route in the costovertebral angle. This is principally useful for drainage rather than for any manipulation, and is only applicable for the exposure of the head or tail of the pancreas, especially the latter, for on the right side posteriorly we have the commencement of the portal vein.

III. The severity and often rapidly fatal nature of the lesion is an impediment to successful operative treatment. Of late the opinion has been gaining ground that in acute pancreatitis it is best to operate early and not to wait for recovery from the initial collapse, but to treat the latter by infusion, etc. As I have stated elsewhere, I am heartily in favor of this course.

[1] Read before the Academy of Medicine February 4, 1904.
[2] Received for publication, February 20, 1904.

IV. As a result of the comparative rarity of acute or subacute pancreatitis, few, if any surgeons, have had a large personal experience. Although I have operated on two acute cases within ten days of one another, yet two years have gone by since operating on my third case. This limitation of personal experience lessens our skill both in diagnosis and operative treatment.

V. It is the difficulty of diagnosis which more than anything else prevents the more rapid development of the surgery of pancreatitis, as well as of other lesions of the gland. As a matter of fact the diagnosis is seldom made until the operation or autopsy reveals it. Have the recent advances in the knowledge of the pancreas added nothing to our ability to diagnose acute and subacute pancreatitis? The subjective and objective symptoms and the disturbances of function are the means that we have at our disposal. Little or nothing new can be said of the former two, while the symptoms attributable to disturbed pancreatic function are, according to the data collected by Oser, almost invariably connected with chronic lesions productive of extensive destruction of pancreatic tissue; or with interference with the passage of its secretion into the intestine.[1] When there is extensive chronic destruction of pancreatic tissue, with or without diabetes, the patient is, as a rule, beyond the help of operative measures. Glycosuria is present in only a minority of the cases. Visible fecal fat and undigested muscle fibres are most often associated with chronic obstruction of the pancreatic ducts, hence they are only of service in the diagnosis of chronic pancreatitis. The occurrence of pentose, the quantity of ethereal sulphates and the presence of the fat splitting ferment in the urine, the use of which is of recent date, are inconstant or uncertain. Only the presence of the latter, suggested by Opie, would appear to be of service in the diagnosis of acute pancreatitis, and it has not yet been sufficiently investigated. But little if any light, therefore, has been shed on the diagnosis of acute pancreatitis by recent advances in our knowledge.

I wish to call attention, however, to two points in the diagnosis of acute pancreatitis. Flexner has observed the fact[2] that in experimental pancreatitis glycosuria appears early (thirty minutes at the earliest) and disappears after a few days, even in lasting alterations of the pancreas. In the third and last case of acute pancreatitis upon which I have operated, glycosuria was present in large amount on the first day and had disappeared by the third day. In the two other cases seen for the first time on the first and third days of the attack it was not noted. It seems to me not unlikely that if we see cases of acute pancreatitis soon after the onset of the attack, transient glycosuria may be more often observed.

My limited experience coincides with that of Hahn when he says that severe acute pancreatitis, in contrast with the more subacute forms, presents quite a characteristic picture for the purposes of diagnosis, so that to make a probable diagnosis lies mostly in the realm of possibility. Its onset is sudden, with intense, colicky epigastric pain, later becoming general, severe vomiting and eructations, and distention, rigidity and tenderness, especially of the upper abdomen. There is marked collapse and the face and extremities are cold, often cyanotic and covered with a cold sweat. The pulse is small and rapid and the temperature is not high, often subnormal. Motor disturbances of the stomach and intestines, *i.e.*, vomiting and obstipation, are so commonly associated that the diagnosis of intestinal obstruction is most often made. If this symptom-complex occurs in connection with corpulence, alcoholism, gall-stones, gastroduodenal catarrh, traumatism or arteriosclerosis, conditions in which acute hemorrhagic pancreatitis is most often found, the diagnosis is made still more probable.

Though the recent advances in the knowledge of the pancreas have so far helped us very little in the diagnosis of acute pancreatitis, yet it is probable that it is and will be made more often than in the past, because we better understand the symptoms, and are more on the lookout for the condition. It is most often mistaken for acute perforative peritonitis or acute obstruction of the bowels, high up, and many times cannot be differentiated from them. Although the latter condition is not common, most cases of acute pancreatitis have been operated on with the diagnosis of intestinal obstruction.

Emphasis should be laid upon the fact that the best means of diagnosis and treatment is an early laparotomy, and that this is also the proper treatment of those conditions for which the pancreatitis may be easily mistaken, including, besides the above-named conditions, various lesions of the gall-bladder and appendix. The diagnosis is established if the exploratory incision reveals the presence of fat necrosis, which Flexner and others have shown to be due to the escape into the tissues of the fat-splitting ferment of the pancreas. If fat necrosis is not present the presence of a hemorrhagic exudate and manual examination of the pancreas may also lead to the diagnosis.

As to treatment, heretofore the expectant plan was commonly advised until the symptoms of collapse had passed off. At present I think the best surgical judgment is turning in favor of early operation. As Hahn[1] says, most severe cases die within four or five days, many indeed in the first twenty-four hours. Those that survive longer develop general peritonitis, local abscess or necrosis of the pancreas. In a very few cases the process is arrested. I do not question that, at present, statistics may show a better prognosis among those operated on for local abscess or necrosis, in what may be called the second stage, but they do not take into consideration that most

[1] Fitz: Transactions of the Congress of American Physicians and Surgeons, Vol. VI, 1903, page 37

[2] Flexner and Pearse: *University of Pennsylvania Bulletin*, August, 1901.

[1] Hahn: Deutsche med. Wochenschrift, 1901, v, p. 5.

of the cases die before reaching it, that the best means of treating the collapse is evacuation of the peritoneal exudate and an intravenous infusion, and that many cases do not develop a local abscess but a general peritonitis, as in three cases upon which I have operated. With equal reason a similar argument based on prognosis might have been (and as far as I know may have been) made against the modern operation for appendicitis in the early days of that operation.

The question of early operative treatment is associated with that of the significance of the exudate. The pancreatic secretion, from an injured pancreas, mixed with blood has a very toxic effect and in the peritoneal cavity may so affect the peritoneum as to cause death. Whether any other fatal cause, unless it be a nervous one, is at work in the rapidly fatal cases of acute hemorrhagic pancreatitis has not been determined, certainly the amount of the hemorrhage alone is not sufficient to cause death. In acute pancreatitis we have the addition of bacterial infection, for the invasion of which the local irritation of the peritoneum by the abnormal pancreatic secretion makes the way easy. Bacterial infection may be, and as a rule is, the cause of the pancreatitis. Some very acute cases of hemorrhagic pancreatitis may die before the bacterial infection has had time to affect the peritoneal exudate.

Statistics collected by von Mikulicz[1] show that drainage greatly improves the prognosis of operations for acute diseases of the pancreas. The peritoneal exudate in acute pancreatitis commonly contains bacteria of one kind or another, and the toxic and infectious nature of this exudate makes its evacuation most necessary. This is borne out by the results of early operations where merely evacuation, irrigation and drainage were employed. I have elsewhere[2] reported two cases of this kind and referred to five reported by others, all resulting successfully. Hahn[3] strongly advocates it, stating that in collapsed patients it can readily be done under cocaine anesthesia. He warns against prolonging the operation in these collapsed patients, and if fat necrosis is present, or a very large pancreas is palpated, the operator should abstain from exploration of the intestine for obstruction.

Personally I agree with Hahn, that nothing more than evacuation, irrigation and drainage should be done in these severe cases, and this can be accomplished under cocaine anesthesia. But von Mikulicz inclines to the opinion that the operation should directly include the pancreas in order to check the further development of the disease and prevent necrosis. By analogy with acute phlegmon, he reasons, *a priori*, that we should incise the pancreas to remove tension and expose the focus of infection. In support of this he appends the report of a case so treated by Dr. C. B. Porter, at the Massachusetts General Hospital. It would seem, however, that the operation on the pancreas itself, besides prolonging the whole procedure, adds the special dangers of operations upon the pancreas. Von Mikulicz[1] says "that the operation so far as it includes the organ itself, is much more dangerous than an operation upon any other abdominal organ," and he further calls attention to the greatly increased mortality in his operations for gastric cancer when the pancreas was involved. On this point we need more experience, but my own and that in the five other cases referred to points the other way. In three cases of my own, in which only evacuation, irrigation and drainage were employed, I fully expected to have to operate later for an abscess or necrosis of the pancreas, but in these and the other cases referred to as similarly treated no occasion arose for such an operation. In my third case the operation was delayed until eleven days after the commencement of the attack, and yet the pancreatitis resolved. Hahn's case was considered moribund at operation, yet recovered completely. The fact remains, though a satisfactory explanation of it may be lacking, that this simple operation both relieves the immediate condition and limits the progress of the disease.

The surgical treatment of chronic pancreatitis is an advance of recent date which we owe to the studies and work of Robson and others. Its occurrence is more common than that of the acute form and its etiology is generally a chronic catarrh of the pancreatic duct extending from a similar condition in duodenum or common bile duct.

If in addition to the pain and a tender spot an inch above the umbilicus prolonged jaundice appears, with or without a distended gall-bladder, a probable diagnosis can be made. Under anesthesia an enlargement of the head of the pancreas may be felt. Owing to a similarity in course, symptoms and signs, the diagnosis from cancer of the head of the pancreas may not be easy, even after operative exploration. Although the pain and tenderness are less marked in pancreatic cancer, whereas the jaundice is more intense and unvarying, the difficulty of distinguishing it from chronic pancreatitis has often led to postponing active interference in cases of the latter. Opie, Robson and others have called attention to the close relation between chronic pancreatitis and cholelithiasis, and even with the differences in the position and usual character of the pain and tenderness the diagnosis between the two is not always easy. In chronic pancreatitis jaundice is more constant, the gall-bladder more apt to be dilated, and there may also be disturbances of function evidenced in the urine and stools. As in the similar diagnostic predicament in acute pancreatitis, an exploratory operation is the proper course, and Robson has shown by a brilliant series of operations of considerable number that the condition may not only be relieved, but completely cured by indirect drainage through the gall-bladder, by a cholecystostomy or a chole-

1 Loc. cit.
2 *Annals of Surgery*, November, 1903.
3 Transactions of the Congress of American Physicians and Surgeons, 1903, p. 62.

1 Transactions of Congress of American Physicians and Surgeons, Vol. VI, page 58.

cystenterostomy, thereby relieving the tension, congestion and inflammation of the head of the pancreas. The mortality in Robson and Moynihan's series of cases was only about four per cent. Many cases of chronic pancreatitis have been operated on under the diagnosis of cancer of the head of the pancreas or cholelithiasis and the latter may often coexist with chronic pancreatitis, as many surgeons have experienced.

Time does not allow me to speak fully of this interesting condition, or to do more than mention a few points in connection with other surgical affections of the pancreas.

Of cysts of the pancreas, the most common lesion, as far as the number of operations is concerned, our knowledge of their etiology and pathology has advanced very materially in recent years. The fact that chronic pancreatitis is the most common cause of retention cysts adds another reason for early diagnosis of and operation for the former and its common cause or associate, cholelithiasis. Pseudo or peripancreatic cysts have been shown to constitute a large proportion of so-called pancreatic cysts. Since Gussenbauer's historic case in 1882 the most common and satisfactory operation has been incision and drainage, after fastening the cyst to the anterior abdominal wall, *i.e.*, so-called marsupialization. The mortality from this operation has been but four per cent., while two of the 23 cases of enucleation have died.[1]

Tumors of the pancreas give a less favorable outlook. Unvarying intense jaundice with a painless distended gall-bladder suggest a tumor of the head of the pancreas, which is by far the most common situation for cancer. Some 16 cases of removal of tumor of the pancreas have been reported with a mortality of 50 per cent., not so bad a result as the difficulties of the situation would lead one to expect. Franke[2] claimed to have removed the entire pancreas in a case of tumor and the operation was followed by glycosuria only from the fifth to the nineteenth day. The patient died five and a half months later. Unfortunately, these cases are left too long and are not referred to the surgeon until a palliative operation like cholecystenterostomy is the only feasible procedure.

So few cases of pancreatic calculus have been carefully observed and recorded that a typical picture of the disease cannot be given as yet. They have been met with and removed when cysts or abscess have been caused by or associated with them. One case has been recently reported by Moynihan[3] who diagnosed the condition and operated successfully upon it.

In conclusion I would like (1) to urge the more general use of Hahn's method of operating for acute pancreatitis in the early stages, by evacuation, irrigation and drainage; (2) to emphasize the fact that as several serious lesions of the pancreas may be due directly or indirectly to cholelithiasis we are provided with another indication for more frequently operating on the latter condition; (3) to suggest that as an exploratory operation is the only way of making a diagnosis in many cases of pancreatic disease, and as these, as well as the conditions they resemble, also demand prompt operative treatment, we should not hesitate to advise an early resort to it in case of any doubt. The diagnosis of an indication for exploratory incision is all that is absolutely necessary.

[1] Ransohoff, *American Medicine*, July 27, 1901.
[1] *Archiv f. klin Chir.*, Bd. LXIV, 1901.
[3] *Lancet*, August 9, 1902.

THE APPLICATION OF CONSERVATIVE AND RADICAL SURGERY TO CHRONIC NASAL ACCESSORY SINUS DISEASE.[1] [2]

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The subject-matter of this paper has been secured by observations upon some two hundred cases of chronic disease of the different nasal accessory sinuses, treated radically, and upon one hundred and ten cases treated conservatively. Upon a minority of these cases I have had the opportunity to operate myself. I have assisted at all the remainder and have carried out the after treatment of the great majority.

Before passing to the consideration of local treatment, I wish to add my testimony to that of those who have insisted upon the treatment of the general condition. Too many argue that, if proper local measures are taken, the general condition will speedily improve. While this is true in a great many cases, it fails in a great many. It is also true that the local condition improves much more rapidly when the general health is cared for. A hospitalized patient does not heal well, and other things being equal, that method of treatment should be chosen which the soonest discharges the patient from the house.

It is conceded that some cases of chronic empyema yield to conservative measures, while others require radical ones. It is upon the percentage of those which should belong to each class that operators differ. Jansen makes the statement that if one sinus is affected, all the sinuses on that side of the head are more or less affected, and believing that, feels compelled to adopt radical methods more often than do most other men. In my experience fully one-half of all chronic empyemas of the antrum are simple, not combined. At least in a series of forty-six cases, twenty-one were uncombined. That is, disease in the other sinuses had shown itself neither by symptom nor sign. Recognizing that empyema may lie latent without the exhibition of pus, the ethmoid and sphenoid were exploratorily opened with negative result. By far the greater number of cases can be treated successfully conservatively, and recourse to radical operation should be had infrequently. Careful and accurate diagnosis and painstaking treatment will be successful in the great majority of cases. I speak of com-

[1] Read before the Eastern Section of the American Laryngological, Rhinological and Otological Society, Fall River, Mass., Jan. 30, 1904. Presented as Thesis for membership in the American Laryngological, Rhinological and Otological Society.

[2] Received for publication March 7, 1904.

plete relief in 50 per cent. of all chronic cases and in 90 per cent. of uncombined ones.

To consider first the application of conservative treatment to chronic empyema of the antrum. There are three methods: the alveolar, that of the canine fossa, and the intranasal.

The operation through the alveolus is, in my opinion, admissible only when a diseased tooth may be considered the active etiological factor, and only in such cases can it be expected to yield good results. It is applicable to uncombined cases only, and should never be considered the operation of choice. Although according to Hajek and Killian, the antral mucous membrane has no particular predisposition to infection, still the trauma caused by forcing a drill through the alveolus may be sufficient to cause irritation enough materially to prolong the duration of the disease, even to infect a previously healthy antrum, from the germ-laden mouth secretions. Communication with the mouth is in all cases to be deprecated, and the first step in conservative treatment should be to close such an opening. The strongest argument that can be urged in favor of this method is that it affords free egress of fluid pus already in the antrum. The fact that it does not afford drainage from the most dependent part of the antral floor, is sufficient to show that it does not perfectly fulfil even this duty. Then, too, pus in the antrum is not always fluid. It many times is very tenacious and stringy, and may lie fastened so firmly to the walls or roof that it is removed with difficulty, even with the forceps. The after treatment generally employed is judicious irrigation or the dry method, followed, in order to maintain the lumen of the opening of sufficient size, by the insertion of a wick of gauge, than which there is no better medium for the conduction of infective material, unfortunately, however, in both directions. If the antrum is practically dry, that is, if there is no formation of pus in the antrum itself, the upper end of the wick is nevertheless soaked with infected secretion very soon after its insertion. Then, too, as Luc has put it, the patient is forced for a long period to take his food flavored with a sauce of iodoform and pus.

What has been said of the alveolar method may be also said of the method of operating through a small opening in the canine fassa. In addition it may be remarked that here, as no caries or diseased tissue exists, as drainage is not very good, and additional infection almost certain to take place, there is no indication for this method of operative procedure. Soon the operator is confronted by the fact that he must either insert a hard rubber obturator to maintain a permanent opening or allow the wound to close. In the one case he forces the patient to wear a foreign body in his mouth for the rest of his life, while if he adopt the other measure he may reasonably expect a recurrence. To reopen the wound is to court reinfection. It is in the pursuance of these two methods that careful control is impossible, and recurrences most frequently occur. Many times the operator, after seeing his case do well for several weeks or months, is dismayed to find not only a recurrence of symptoms, but an aggravation of the previous condition.

It is, I think, from intranasal methods that the best results from conservative surgery must be expected. To their successful use belongs not only the treatment of the sinuses affected, but of the entire nose and naso-pharynx. (This and the following statements do not refer to cases whose sole cause is an infected tooth.) Pathological conditions are always found, and it is very generally seen that permanent results are not secured until they are corrected. It is evident that a deformed middle or inferior turbinate or ethmoidal bulla may interfere with the proper drainage of a frontal, ethmoid or antrum. The fact that hypertrophic conditions are seen in almost all cases is significant. When an obstructing septal deviation exists, the empyema is found on that side toward which the septum deviates. If the posterior end of an inferior turbinate, or a mass of adenoid is seen to be markedly greater upon one side than upon the other, it is on that side that the empyema is generally to be found.

That this is not mere coincidence is, of course, granted. The question is, How far is the hypertrophy an important etiological factor in the causation of empyema, and how far does it influence its course? The hypertrophic condition, either congenital or arising from external conditions, occupation, mode of life, and so forth, particularly predisposes to influenza, diphtheria, scarlet fever, measles, and repeated head colds, which are themselves the diseases most important in the causation of empyema. It is continual sneezing, hacking and coughing that loosens the mucous membrane from the nasopharyngeal wall and predisposes to polypoid degeneration, polyps and severe infection. Nasal hypertrophy not only predisposes, but is also a direct etiological factor, and may be considered to act in one of two ways. A posterior end or a mass of adenoid may become a depot for the deposit or formation of pus, and so make a continual feeder of infective material which may find its way into any of the accessory sinuses and set up an empyema essentially chronic from the start. The condition, then, which has been so important in causation, is naturally an important agent in determining the chronicity of the disease. I can recall cases that had for months resisted treatment, some of which had gone on to radical operation with counter opening in the nose, and which continued to pour out pus for months, finally clearing up after the removal of some apparently insignificant mass of hypertrophy.

Hypertrophies act, then, as sources of infection and reinfection. They act also in another way equally important. That is, they prevent free nasal respiration, and free nasal respiration is the *sine qua non* in the successful intranasal treatment of chronic empyema. It is the failure to note this fact that compels many operators to resort unnecessarily to radical methods. It is im-

portant not only that sufficient air for breathing purposes pass through the nose, and that the patient keep his mouth closed, but that the nostrils functionate properly. According to the theory first advanced by M. Halle, of Berlin, the action of the air passing in and out through the nose is that of a chimney, drawing out the air and incidentally any secretion from the accessory sinuses through their ostia. In my opinion, this is important. In no other way can I account for the presence in the middle meatus of strings of dry tenacious pus which have made their way slowly out of the anterior accessory sinuses. It may be said that in the sinuses this pus was fluid, but dried after appearing in the nose. This may, to some extent, be true, but some of these cases, when opened radically, show just such tough strings of pus, very firmly adherent to the sinus walls. They often extend from the inner wall out through the ostium and into the nose.

Then, too, the patient, immediately after a Killian radical frontal operation, can by forced inspiration aspirate the entire serous contents of the frontal sinus backward into his throat. Nor is this aspiration confined alone to the course of the inspired air usually given in text-books. It is marked in the inferior meatus as well, as evidenced by the fact that the flow of tears can be much hastened by snuffling, and by the fact that a few grains of iodoform powder blown into the antrum soon make their appearance in the inferior meatus, if an opening be present there. To those who believe in this theory the importance of correcting any abnormalities that may interfere with free and proper nasal respiration will be evident. Drainage of the antrum by aspiration into the nose is, in my opinion, freer and as a therapeutic agent more satisfactory than drainage by any other method. This has been borne out by clinical results, for, since this theory has been evolved, cases which had previously done poorly, have, after removal of obstructing septal deviations, spurs, and so forth, made satisfactory recovery.

The first step then, in this line of surgery, is to establish free nasal respiration, and to correct any pathological condition that may exist. In attacking the antrum it is, in my mind, immaterial whether one choose the middle or the inferior meatus. Personally, I prefer the inferior. Here the bone is thicker, it is true, but there is less danger of penetrating the orbit. The inferior edge of the inferior turbinate should be removed in order to give free approach to the lateral wall of the nose. An opening should then be broken into the antrum, one-half an inch by three-quarters in size. This is easily done with an electric drill or with a mallet and chisel. A curved metal tube three-eighths of an inch in diameter is inserted into this opening, and the sinus vigorously politzerized. Very generally by this first inflation, pus is found, though in many cases, even when pus is in the antrum, it does not make its appearance at this time. The antrum should then be thoroughly irrigated, and again politzerized, irrigated and thoroughly dried. Iodoform powder may then be insufflated. By this method it is safe to say that any pus in the antrum will be secured. It is important to note that at the time of operation, or at any time during the after treatment, although the antrum may sound dry at the first politzerization, it is not wise to consider it so, for small masses of pus which are the sources of infection and which must be removed are often adherent to the walls. To overlook this fact renders the operator likely to consider the antrum healthy. This is especially true where the antrum is opened for diagnostic purposes—transillumination being negative and no positive signs of antral disease being present. A second irrigation and politzerization are necessary to dislodge such masses.

I believe in discontinuing irrigation at the earliest moment, and resorting to the dry treatment. Regeneration of the mucous membrane must thus be better assisted. This method of treating uncombined empyemas of the antrum appeals to me. The use of the electric drill is almost painless, quick and easy. It makes an opening large enough, so that the after-treatment can be carried out without discomfort and in great part by the patient himself. In favor of this method of treatment is the fact that this opening may be maintained without danger of reinfection, and that careful control is thus made possible. It should prove satisfactory in certainly not less than nine out of ten cases.

The cases which do not clear up are combined, in my experience, generally with the ethmoid. There is no doubt that the ethmoid serves as a source of infection in the great majority of obstinate combined empyemas, and in all obstinate cases should be most carefully examined. If the ethmoid is involved, removal of the anterior half of the middle turbinate exposes several of its cells. If care be taken, operating at each sitting only so far as the field is clearly visible, ethmoids of small size may be very well cleaned out through the nose. An invaluable aid is the speculum of Killian for median rhinoscopy, by which the different openings of the ethmoidal cells can be very clearly seen and the points of pus detected. Free daily use of the soft probe often detects infected cells not before suspected. Thoroughness in operating on the ethmoid is most important in determining the degree of success to be obtained. The anterior two ethmoidal cells and those extending over the orbit cannot be reached through the nose. In cases which do not yield to this much surgery, the frontal sinus is probed, catheterized or politzerized as may be possible.

In extensive ethmoidal disease involving the posterior cells, the sphenoid is at once suspected, and must be examined. The first step toward inspection of the sphenoid is the thorough removal of any septal deviation obstructing the view of the sphenoidal orifice. The opening can then in a large percentage of cases be made out. For narrow noses, where the ostium is invisible,

is suggested under cocaine and adrenalin, the use of a soft, slender silver probe, bent somewhat like a eustachian catheter, but with a more uniform gradual curve. This probe is inserted, convexity upwards, between the septum and middle turbinate, and pushed gradually upward until it rests against the cribiform plate. It is then pushed gently backward until the posterior pharyngeal wall is felt. It is now in the immediate neighborhood of the sphenoidal opening. A little manipulation very generally succeeds in passing it into the sinus. Hypertrophic turbinates do not obstruct as the probe is passed above them, and septal deviations, whether cartilaginous or bony, do not extend so high. The perpendicular plate of the ethmoid immediately below the lamina cribrosa rests almost always in the median line, so that approach to the sphenoidal orifice by this route is free.

If neither polyps or granulations can be felt, the patient may sit for ten to thirty minutes, the probe in position, and head bent forward, in the hope that any pus present may make its appearance on the probe. If this procedure is negative a slender canula following exactly the curve of the probe that has already been successful, is inserted. The sinus is catheterized and a very fair idea of its condition is secured. If it be found diseased, the entire anterior inferior wall is removed, and the sinus wiped out with cotton-carrying forceps. Great care must be taken to remove the entire wall to prevent the formation of exuberant granulations and scar tissue. By removing this wall completely the annular contraction around the orifice frequently so troublesome is largely obviated, that is, until the sinus is healed, after which it may be allowed to take place. This, of course, presupposes the correction of any septal deviation toward the affected side, and is greatly facilitated by the Killian speculum, which can be inserted almost to the posterior pharyngeal wall. The obstinate sphenoidal empyema is almost always combined with disease of the posterior ethmoid cells, so that they must always be considered together.

So far can one go along intranasal lines, and not until so much has been done, carefully and painstakingly, is one warranted in considering radical surgery. The first end to be secured is the alleviation of distressing symptoms, such as pain, headache, neuralgia, sense of head pressure and of illness. These are always greatly improved by the first evacuation of pus, which can be accomplished quite as well and with much less cost to the patient by conservative as by radical methods. It is only when there is present malignant growth, caries, cerebral symptoms, or imminent danger of fistula formation that one may proceed at once to the greater operation. One should never resort to radical surgery because the symptoms are severe, the pus foul, and the physical depression profound. It is not by any means true that the most chronic cases are always the most difficult to treat, and are those to require radical measures. One should not consider that because the patient has had a foul-smelling empyema for twenty years that it will not yield to conservative methods. Many authors have expressed surprise that antra that have discharged a most fetid pus for years should clear up completely after being irrigated a couple of times. The reason for an apparently remarkable cure is not far to seek. They belong to what Avellis calls "Eiter-Rest-" Empyema (empyema due to traces of pus), and owe their condition to the fact that after the acute inflammation has subsided the pus loses its virulence, lies stagnant in the cavity, forming slowly and being slowly discharged. The mucous membrane assumes a certain tolerance of its presence, and absorbs it with reluctance. The chief evidence of this condition is a desquamation and caseation of the antral epithelium, similar in odor and appearance to the cholesteatome of chronic suppurative middle-ear disease. As long as the natural antral orifice remains patent, the material makes its escape easily, especially at night. It is only when the orifice becomes occluded by dried pus or by some other means, that the antrum becomes filled with a semi-solid, remarkably foul, cheesy tumor that may, and sometimes does, perforate the antral wall, generally the anterior one.

When now it becomes necessary to resort to radical operation, there seems to me to be but one method to pursue. I have classed the intranasal operation, described by Dr. Curtis before this society last year, as a conservative one. When one chooses to operate radically, he feels the necessity of securing a free and comprehensive view of his operative field. This can be secured only by operating through the canine fossa. I have said that, in general, only combined empyemas require radical measures. Therefore, in operating upon the antrum, that operation should be chosen which exposes for examination and treatment not only the antrum, but also those sinuses in combination with which it is most frequently diseased, namely, the ethmoid and sphenoid. For this purpose the Kuster operation is insufficient, and the so-called Luc-Caldwell operation, or some modification of it, should be chosen. The one that appeals to me the most strongly is the one employed by Jansen, though I differ from him in some points that seem important.

The operation is as follows: (1) Careful cleansing of the teeth; (2) shallow anesthesia; (3) insertion of gauge strips between the cheek and the superior and inferior rows of teeth, to prevent hemorrhage backward into the throat.

Operation.—(1) Incision through the mucous membrane and periosteum, just above the tooth line from the first molar to the first incisor. (2) Retraction of the periosteum and resection of the entire frontal wall of the antrum. (3) Careful inspection of the antrum, its walls, mucous membrane and contents. (4) More or less thorough erasion of mucous membrane. (5) Removal of the median wall by means of forceps. (6) Curettage of the ethmoid through the area correspond-

ing to the insertion of the middle turbinate. (7) Inspection of the previously treated sphenoid and removal of any pathological contents, with resection of the entire anterior-inferior wall. (8) Formation of the mucous membrane flap and counter-opening into the nose. (9) Loose packing in the antrum, ends extending into nose. (10) Suture of the mucous membrane flap to the median end of the initial incision. (11) Complete suture of the initial incision for primary union.

In commenting upon this operation, I wish to say that a thorough and comprehensive view of the antrum, ethmoid and sphenoid is secured. The importance of leaving as much mucous membrane as possible is great. Knowledge of the pathological conditions existing in chronic antral disease, and the success of conservative methods of treatment, leads one to infer that much of the mucous membrane always removed during radical operation would, if allowed to remain, regenerate. If there is doubt in the mind of the operator concerning the viability of mucous membrane, it should not be removed. It can do no harm, and even the smallest bits shorten the duration of the after treatment. By this method of treatment, one or two anterior ethmoid cells are always found that could not be reached through the nose. In large ethmoids there still remains another anterior cell and some extending over the orbit that cannot be reached even by this method.

The mucous membrane flap may be made in two ways: An incision anteroposteriorly along the inferior edge of the attachment of the inferior turbinate is made; another along the floor of the antrum; these two are joined posteriorly. The flap thus formed is about one-half by one and a quarter inches. It is turned into the antrum and its tip sewed to the buccal mucous membrane in the line of the initial incision and near its median end. The second method is that used by Killian. It is as follows: The first incision is the same as the first incision of the other method—along the attachment of the inferior turbinate. From the anterior and the posterior ends of this incision two short ones are made vertically downwards to the floor of the antrum. The flap thus formed is turned down over the antral floor and held in position by one suture. The second flap is somewhat larger than the first, and is especially adapted to cases in which the anterior wound is to remain open, as the removal of the gauze packing through the nose is likely to loosen it. The packing in the antrum should be loose, arranged carefully, and when the primary incision is closed, should be led by two strands well into the inferior meatus. Else it is removed with difficulty, and may even require a primary anesthesia. It should remain five days. Care must be taken to smooth the edges of the bone opening to prevent the formation of exuberant granulations and possibly gangrene of the flap. The sphenoid should not be packed. If it is carefully wiped out at the time of operation, the hemorrhage from this point will generally be slight, and if it does occur, it is safer to let it bleed than to fill the sinus with gauze.

The relation of the sinus to the optic nerve and brain is so intimate, its walls so paper-thin, even containing dehiscences, that pressure upon the bleeding points of the small branches of the spheno-palatine arteries that nourish the lateral walls may cause the backing-up of blood, elevated pressure, permanent injury to the optic nerve, or even hemorrhage into the cranial cavity, as I have seen occur.

The gauze packing is removed on the fifth day, through the inferior meatus if the buccal wound was sutured at the time of operation, otherwise through the opening in the canine fossa.

The after treatment consists in a judicious use of irrigation, politzerization, and the dry method. Its duration is variable, and extends over a period of months, depending largely upon the care with which it is carried out. After the first ten days the patient, properly instructed and furnished with a suitable tube, can carry it out at home. Here again it is important to irrigate as infrequently as possible to assist the formation of new mucous membrane and scar tissue, and to prevent the formation of exuberant granulations. If these granulations form at the osteum of the sphenoid, they can be removed with a sharp spoon. In the most troublesome cases they form in the antrum, and may require even a reopening of the primary incision. Despite this fact, in all cases where it is deemed possible, the anterior wound should be closed, else the antrum becomes merely a very slowly healing depot for the reception of infective material and food. There are cases of caries, perforation and malignant growth, where the wound must remain open. In these the healing is facilitated by the early application of large Thiersch grafts, the larger the better. Packing should be discontinued early, or as soon as the grafts have taken. The granulations may be kept down by silver, and the buccal wound closed with a plug of cotton. Even after the wound has entirely healed, a roll of cotton, which can be changed at will, will generally be found to be more agreeable to the patient, and to cause less irritation to the mucous membrane than a hard rubber obturator.

Not only does an unclosed antrum serve as a receptacle for infective material, but it also often causes most unpleasant subjective symptoms, such as sensations of pain, cold, lightheadedness and occasional vertigo, which may persist.

The fact that cases of combined empyema of the antrum, ethmoid and sphenoid, which resist careful, conservative treatment, are generally those with large atypical ethmoids which are difficult, dangerous and sometimes, even by this method, impossible thoroughly to eradicate, renders doubtful the prognosis for absolute recovery, after even the most radical antral operation. These cells must be approached by another route—by an external operation generally through the frontal sinus.

Many different methods for operating upon

the frontal sinus have been advocated, but most of them have fallen into disuse. In the case of this sinus one should resort to radical methods with the greatest reluctance, and it is unfortunately here that the least can be done conservatively. In proceeding radically, one presupposes that every effort along conservative lines has been made, that neither the antrum nor the sphenoid is the cause of the continuance of the frontal disease, but that it must lie either in the frontal sinus itself or in the orbitofrontal or anterior ethmoid cells. The anterior ethmoid cells open either into the infundibulum or into the frontal sinus, and clinical experience bears out the statement that these are always infected together. The former is generally the source of the sinus disease. The operation chosen for the relief of this condition must be one to expose thoroughly both these areas. I shall consider three methods of procedure: (1) that of Hajek, the object of which is to secure drainage of the sinus; (2) that method by which the frontal sinus is to be obliterated by the formation of granulations, and by packing; (3) Killian's operation for the obliteration of the sinus without packing.

To consider the first briefly, an incision is made through the soft tissues and periosteum, passing through the eyebrow from its temporal to its median end. From the median end a second incision passes vertically upwards to the superior margin of the sinus previously determined by the Roentgen ray. An osteoplastic flap, corresponding to the anterior wall of the sinus, is then cut and turned back in the soft tissues. The entire mucous membrane is erased, bony septa removed, and the walls of the sinus smoothed off. The nasofrontal duct is enlarged as far as possible, the remaining ethmoid cells are excavated, and the sinus cleansed. A conical drainage tube is inserted into the opening between the sinus and the nose, and the wound sutured for primary union. The tube is to remain in place for at least three months, and is to be removed through the nose. It is as large as can be conveniently inserted, and sufficiently conical to hold it in position. From time to time during the after treatment it is gently drawn up and down to prevent its becoming adherent. The object in this operation is, of course, to prevent deformity and preserve the sinus, as well as to eradicate disease. In the first two the operator is generally successful. Deformity is practically absent; however, out of seven cases, Hajek reports two recurrences at eight and nine months after the operation, respectively, and while still under daily observation. These recurrences occurred unexpectedly and without symptoms. The other five cases are recent and still under treatment.

Against this method of operating there is urged in the first place that the necessity of wearing the drainage tube for three months is decidedly unpleasant. Hajek claims that epidermatization takes place readily around it, and that any granulations may easily be controlled with silver nitrate. Considerable contraction must surely take place, however, after its removal. Again, it would seem that the condition in the frontal sinus that existed before operation might again obtain. One of the chief causes of the chronicity of the disease is the deposit of small pockets of pus in the various irregular recesses of the sinus, their inspissation and subsequent formation of fibrous tissue septa. The resulting chamber-building prevents perfect drainage and tends towards recurrence. It is quite possible that with a wide communication with the nose, this reinfection and secondary chamber-formation might again occur.

The second method, that in which granulation formation from the bottom is desired and packing is to be the after-treatment, may be carried out as follows: (1) An incision through the eyebrow from its temporal to its median end, curving downward over the frontal process of the superior maxilla and cheek. (2) Frontal sinus entered through the anterior wall near the median line. (3) Formation of a narrow linear incision through the bone from the opening along the supraorbital ridge to the external boundary of the sinus. This is easily made with Doyen rongeur. (4) Enlargement of the two extremities of this incision so as to receive the jaws of the two rongeurs, by means of which the anterior frontal wall is broken off in the soft tissues to form the osteoplastic flap. The soft tissues and osteoplastic flap are then held back by a retractor which must be managed with considerable care to prevent injury and possible loss of the bone flap. (5) Removal of the floor of the sinus and inner wall of the orbit. (6) Complete erasion of the frontal mucous membrane and eradication of bony septa. (7) Curettage of the ethmoid. (8) Inspection of the sphenoid. (9) Careful cleansing of the sinus and insertion of iodoform packing. (10) Replacing of osteoplastic flap and suture of the primary incision. The center stitch and gauze to be removed on the fifth to the eighth day. Packing is then carried out through the central third of the incision, the external and internal thirds remaining undisturbed.

By this operation anterior ethmoidal and orbitofrontal cells that had escaped observation at the time of the radical antral operation are exposed. A free view of the infected sinuses is secured. Indeed, a more radical operation could scarcely be performed.

As to its after-results: First, upon the eye.—In a large percentage of cases no evil effect is noted. On the other hand, in many cases, more or less unpleasant conditions result. One symptom complained of is diplopia which follows the complete or partial loosening of the pulley of the superior oblique muscle from its bony attachment. If temporary, this diplopia lasts from seven to fourteen days; it may be permanent. Another symptom is dimness of vision, which may result from excessive lacrimation. This lacrimation is due either to ptosis and consequent faulty situation of the superior lacrimal punctum or to permanent induration at the in-

ternal angle which presses upon the lacrimal duct. Another and more serious dimness of vision results from injury to the eye itself. This may be the result of an acute iritis set up at the time of operation by pressure upon the eyeball by the retractor. This iritis may run the usual course and disappear without sequelæ, or develop into a chronic condition, evidenced by no pain, slight injection and considerable impairment of vision. Again, dimness of vision may be due to a condition which I have noticed in two cases of amblyopia following this operation. It is evidenced by a very slight injection of the nerve head and loss of its clear outline. Its fibers melt off indistinctly into the retina, especially upon the nasal side. The trouble, therefore, seemed a traumatic neuroretinitis. Vision in one case was one-thirtieth, in the other one-fifteenth. The refractive media were clear. The only abnormalities present were the ones described. In both cases the amblyopia had persisted two years.

Second, cosmetic results: Small frontal sinuses yield the best cosmetic results, for the osteoplastic flap is smaller and any displacement consequently less noted. Packing also need be continued for a shorter time. Unfortunately, accidents sometimes happen to the bone flap at the time of operation or later. It may be lost wholly or in part. During the formation of granulation tissue and subsequent retraction the upper edge may become adherent to the posterior wall of the frontal sinus and cause the lower edge to tilt forward. Both these accidents are difficult to prevent and naturally have a bad effect upon the cosmetic result. They may even require secondary or tertiary operations, which do not yield brilliant results. Another unpleasant result, which sometimes occurs, is a permanent induration in the neighborhood of the inner canthus. This can be somewhat obviated by gentle massage after the scar is firm. Again, continued packing of a wound so difficult to bandage properly and where it is desirable to expose the eye at the earliest possible moment renders infection very probable. I have seen cases most carefully treated granulate nicely from the bottom and only after a couple of months be found filled with pus. Such infection always makes an ugly scar.

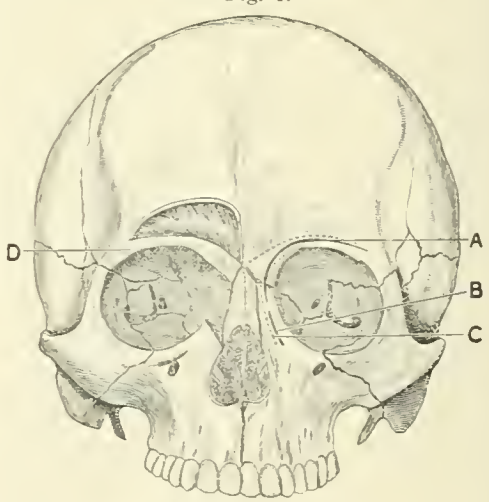
Keeping the lips of the wound separated allows the lower lip to drop down and more or less pronounced ptosis of the upper lip to result. The longer the packing, the greater the chance for reinfection, for ptosis, for induration, the greater the depression and the wider the scar. The shorter the duration of the packing, the less firm the granulation, the greater the danger of recurrence.

There is to be urged in favor of this operation that it is radical and permits as far as possible the eradication of the diseased condition. Against it is urged that it requires months of observation, packing and treatment, that the cosmetic result is doubtful, while injury to the eye is possible.

There remains to be considered the operation of Killian. Inasmuch as there exists nowhere in the literature a perfect description of its technic as it is now performed by him, I will describe it in detail.

(1) Mark the line of incision with a sharp scalpel; incision begins at the temporal end of the eyebrow and is carried through it to the root of the nose, dividing the nasal section of the musculus quadratus in the center of the frontal process of the superior maxilla. It ends in a oblique curve outward below the base of the nasal bone. (2) Periosteal Incisions.—*a*. This incision is made five to six millimeters above and parallel to the supraorbital margin. From the temporal end of the skin incision to the suture between the upper ends of the nasal bones. *b*. The lower periosteal incision follows the course of the skin incision, beginning just median to the attachment of the pulley of the superior oblique muscle. (3) Puncture the frontal sinus just above that piece of bone included between the periosteal incisions. Retract periosteum, chisel through the anterior wall of the frontal sinus, exposing but not perforating its mucous membrane. (4) Determine the size of the frontal sinus by means of a probe, moving between the bone and the mucous membrane. (5) Excise the front wall of the frontal sinus completely. (6) Erase mucous membrane. (7) Remove the floor of the sinus without injury to the supraorbital margin. While doing this, the operator stands behind the head of the patient. (8) Remove the frontal process of the superior maxilla and the remaining part of the sinus floor. Remove the frontal process without injury to the nasal mucous membrane. (9) Excavate the ethmoidal cells and sphenoid, if necessary. (10) Make the mucous membrane flap from the uninjured nasal mucous membrane. At the edge of the nasal bone perforate the nasal membrane by a pointed scalpel. By means of a probe-pointed scalpel continue the incision upward and backward one-half centimeter below the cribriform

Fig. 1.



Killian's Operation Illustrated.

A, upper periosteal incision; *B*, skin incision; *C*, lower periosteal incision; *D*, bridge of bone.

plate, then downward. This flap of the mucous membrane is turned outward and used to cover those parts of the wound facing the nasal cavity. This establishes a permanent communication between the frontal sinus and the nose. (11) Cleanse the wound with salt solution, dust with iodoform; suture the incision for primary union. (12) After-treatment. Place the patient on the healthy side; forbid him to blow his nose. He must aspirate the secreted fluid of the wound. Daily dressings. By no means flush the nasal cavity.

Procedure for radical operation of both sinuses is the same as for the operation upon one side. Begin by removing the front walls of both sinuses and remove the interfrontal septum.

COMMENTS.

The skin incision in this method is made with the greatest care and precision. It is very long and to prevent deformity and to secure perfect coaptation, attention must be paid that corresponding parts are brought into apposition. To accomplish this, it has been suggested to make little nicks at right angles to it, after its course has been marked out by the scalpel. It is not necessary to shave the eyebrow. Its presence is a valuable landmark, and it can readily be disinfected. Stitch abscesses do not occur in the orbital part of the incision, but when present are found in the dependent portion. Care is taken not to weaken the bridge of bone between the periosteal incisions by undue pressure at the time of operation, as its displacement or loss is followed by marked depression and deformity. The periosteal incisions are made with exactness. The length of the lower one has recently been changed, as it was found that loosening of the pulley of the superior oblique muscle sometimes occurred when the line of incision extended clear to the temporal end of the skin incision as it formerly did. Beginning, as it does now, median to the attachment of the pulley it has no such effect.

Attempt is made in all cases to prevent puncture of the mucous membrane of the frontal sinus as long as possible. The size of the sinus can be made out by means of the probe passed along under the bone, but outside the membrane. Unnecessary infection of the sinus cavities and wound edges is thus avoided. The anterior wall of the sinus is thoroughly removed. Any overhanging edges are taken away and left perfectly smooth as in persons with transparent skins and deep sinuses the edge is for some time plainly seen. Attention is paid to the most thorough erasion of the mucous membrane of the sinus, including the under surface of the bone flap. By standing behind the patient while removing the sinus floor the pulley of the superior oblique is avoided. Even though the bone flap is left in position the ethmoid and sphenoid are as readily accesible by this as by any other method.

The formation of the flap from the mucous membrane of the middle turbinate and the lateral wall of the nose is important as it assists materially in preventing formation of exuberant granulations and shortens the after-treatment. Atropine is instilled into the eye at the close of the operation, as a prophylactic against iritis. In this operation also especial attention must be paid to the eye. Pressure against the eye ball is to be avoided as far as possible. I think the narrower the retractor, the less the danger to the eye. The cosmetic results as far as I have been able to see have been very satisfactory. Below the bone flap there is absolutely no depression. If no stitch abscesses occur, the scar is very slight. The bridge of bone prevents loss of contour of the orbit. Removal of the entire sinus floor allows the orbital fat to push upwards so as to fill the depths of the sinus. The question arose in my mind, whether this change in the orbital pressure might not cause some anomaly in the tension of the extraocular muscles, but careful test of one case showed no heterophoria.

There is for several days after the operation more or less flat depression above the supraorbital bridge. However, by the formation of new granulations and the pushing upward of the orbital fat this is but slight and grows steadily less. If it remains noticeable it can be relieved by a subcutaneous injection of paraffin.

The statement made by Killian that he cures his patients without deforming them seems justifiable. The after-treatment is very simple. For several days the serous contents of the wound is expressed into the nose and aspirated backward by the patient. During this period of convalescence he is not allowed to blow his nose, lest he fill the wound cavity with the nucopurulent secretion of the nose or possibly cause an emphysema.

Finally the posterior surface of the soft tissues becomes adherent to the posterior frontal sinus wall. When this has taken place the patient may be considered to be more definitely healed than if his sinus were filled with a mass of granulation. After a few weeks a probe can be passed through the nose into a small cavity about the size of a hazelnut. The frontal sinus itself is completely obliterated.

CONCLUSIONS.

I have permitted myself to draw the following conclusions. Conservative methods are successful in nine out of ten uncombined cases and should always be given a thorough trial before recourse is had to radical ones. Uncombined empyemas are not uncommon. Difficulty in healing is not always in direct portion to the duration of the disease. Drainage of the antrum is most satisfactorily secured through the nose. The ethmoid is the chief cause of the chronicity of obstinate combined cases. The sphenoid is readily accessible through the nose in a large percentage of cases. It can be probed in 90 per cent. of cases by the method advised. The establishing of free nasal respiration is an important factor in securing permanent results. The radical operation should be resorted to infrequently. The best radical antrum operation

is the modified Luc-Caldwell. The best frontal operation is that of Killian. Frontal sinus operations not closed at the time of operation cause deformity. Great care must be taken of the eye at the time of the frontal operation. Accidents to the eye are: (1) Loosening the pulley of the superior oblique causing diplopia, and (2) dimness of vision due to (*a*) extraocular causes —lacrimation, conjunctivitis; (*b*) intraocular causes—iritis, neuroretinitis.

TREATMENT OF LOBAR PNEUMONIA IN THE ADULT.[1]

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According to available statistics, in private practice the mortality in pneumonia ranges from five to 20 per cent., and in hospitals the mortality ranges from 20 to 50 per cent. In southern climates the death rate is higher than in the temperate climate.

After fifty years of age, the death rate is exceedingly high. The habits of the patient and the condition of the bodily health at the time of the attack are the most important factors at all ages in regard to the death rate. In individuals debilitated, either from bad habits, other diseased organs in the body, or undermined health from overwork of body or mind, the death rate is very high, while in healthy, robust individuals, the death rate is as low as from three to five per cent. In children, the mortality after the first year is small.

In summing up the mortality for all ages and under all conditions, the death rate is very high, ranking next to tuberculosis and causing more deaths than diphtheria. Like typhoid fever, the more heroic has been the treatment in the past, the higher has been the death rate. As we have no specific for either disease, the treatment resolves itself, as in typhoid, to be wholly symptomatic and supportive, and a rational line of treatment must be outlined.

By the time the physician is called to see a patient with an attack of pneumonia, the pneumococcus has invaded every avenue, and as there is at present no reliable or trustworthy antipneumococcic serum, we must confine our treatment to meet indications as presented and we must therefore be prepared to meet promptly any emergency that may arise. I, therefore, at once order to be delivered to the sick room, a 200-gallon tank of oxygen, one ounce aromatic spirits of ammonia, one ounce tincture digitalis, mustard plasters, and a cotton jacket to be made to encase the chest and put on the patient as soon as completed. The patient is placed in a large, airy room with plenty of sunlight, the bed so arranged to keep the patient out of draughts, for we require in this disease a free circulation of fresh, pure air both day and night. If the temperature is too cold, artificial heat is supplied to keep the temperature of the room at about 65° F. and a good nurse in constant attendance; no one else should be allowed in the sick chamber; quiet and rest are essential to recovery.

The existing toxemia calls for our first attention, and could we but rid the system completely of this toxemia, I am satisfied many of the serious symptoms which we may be called upon later to combat would be greatly modified or would not ensue.

To combat the toxemia, the skin and the bowels are the main avenues through which this may best be accomplished. If called to see the patient in the first stages, the skin must be acted on, not by the administration of drugs internally, but by opening up the pores by giving a good sponge bath of hot water, using plenty of soap, and then giving a hot foot bath containing mustard. This latter can best be accomplished while patient remains in bed well covered, by the placing of a small tub containing hot water and mustard under the blankets and with the knees flexed and feet in the tub, the blankets are well tucked around him. At same time I have administered a large draught of hot lemonade, which very materially aids free perspiration. The patient to remain in above position for half to one hour; when free perspiration takes place. He is to sweat for about half an hour freely, when he is to be dried and rubbed well with coarse towels to get up a good cutaneous capillary circulation. This greatly relieves the congested and dilated capillaries of the lungs and modifies, to some extent, the amount of inflammatory exudate, at same time reduces any existing high temperature. The chest is now encased in the cotton jacket and should the patient complain of any pain over seat of inflammation, a mustard plaster is placed over same and after this is removed, the chest is well oiled with camphorated oil, which is not only soothing but gives off an agreeable odor to the patient and somewhat soothes and relieves the embarrassed respiration.

The bowels are now to be acted on by the administration of two or three grains of calomel given in divided doses of half a grain every half hour, to be followed in six to eight hours by a Seidlitz powder or dose of Epsom salts. When this is accomplished we have succeeded in relieving very materially the engorged blood vessels and especially the portal and pulmonic congested circulations and any distention of the right heart, and the pulse, though frequent, will be soft and compressible, and the temperature lowered.

The action of the kidneys is best kept up by the free administration of pure water at the temperature of the room. It is a serious mistake to administer stimulating expectorants and diuretics. The least medicine given the pneumonic patient the better are his chances of recovery. To give medicines to excite too great functional activity in the already inflamed lungs or kidneys is absolutely contraindicated. The stimulating expectorants absolutely have no place in lobar pneu-

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monia. The kidneys being more or less involved in every case of pneumonia, dry cupping over the kidneys is all that is required. The teeth and mouth must be kept sweet and clean by the frequent and thorough cleansing of the same with an antiseptic solution.

To aid in the elimination of the toxemia, mild action of the bowels should be kept up, either by a daily dose of a mild saline aperient or aided by an enema of warm sterile water. The action of the skin should be maintained by the daily sponge bath of tepid water and soap.

The diet should consist of plenty of pure water at the temperature of the room, and all food should be liquid—chiefly milk. If the stomach is weak, the milk should be peptonized and be given in small quantities, not over four to six ounces at stated intervals of every three hours. Overfeeding must be avoided, as this would embarrass both respiration and circulation. If only one lobe is involved, our patient may go on to recovery without any further treatment, but if a large surface be involved or a double pneumonia exists, our skill will be taxed to the limit. The heart will be the first to need our most careful attention. Heart symptoms may develop at an early stage and the attending physician should make frequent visits to be able to recognize its earliest appearance. The nurse must be instructed and be on the alert at all times, never leaving the bedside, that she may recognize any wavering of the heart action.

The treatment of pneumonia here is the treatment of the conditions presented, not the treatment of the lungs, but the stimulation of the heart and the elimination of the toxemia. To help ward off heart weakness, I usually commence the early administration of one-sixtieth grain of strychnine hypodermically every four or six hours according to amount of lung surface involved and the condition of the circulation, and gradually and systematically increase the dose to one-thirtieth or one-twentieth grain, as circumstances demand. Strychnine acts powerfully upon the vasomotor and respiratory centers, increasing their activity, and we must not push the remedy too strongly, for strychnine is also a powerful narcotic and is also a stimulating expectorant and we may, at certain stages of the disease, increase the engorged condition of the lungs. We, therefore, should watch its action as closely as we watch the action of the wavering heart. This is why we are sometimes disappointed in the action of strychnine when it fails to strengthen the heart's action at a critical time. It is here that alcohol in the form of good rye whisky or pure brandy, in doses of one-half ounce, diluted in water, supported by five minims of tincture of digitalis, is called for and the strychnine continued in moderate doses. Should we need a more quickly acting stimulant, 30 minims of the aromatic spirits of ammonia with five to ten minims of tincture of digitalis, given in water, is called for.

I wish here to say that too heroic doses of strychnine are a mistake for the reasons above given, and if the ordinary or moderate doses do not meet the desired aim, I can justly say I have never accomplished any good results by having resorted to heroic doses.

In those cases especially where the fever runs high and there is little or no delirium, and where the heart sounds particularly the second pulmonic has lost its force, one-half ounce of whisky or brandy repeated every three hours, if the patient rests more quietly after its administration, is doing good, but should the patient become restless, it is not doing good and must be discontinued. Here is where the tincture of digitalis in small doses proves beneficial. By small doses, I mean five to ten minims in a little cinnamon water or given in conjunction with the brandy every four or six hours.

Should cyanosis appear at any time, small drinks of champagne or the aromatic spirits of ammonia in doses of 30 minims in water is called for promptly, a mustard plaster placed over the heart and the continuous inhalation of oxygen gas. For several years I have placed much reliance in the administration of oxygen. Not as it is usually given, as a last resort, but its administration throughout the course of the disease from the time of the engorgement of the inflammatory exudate to the end of resolution. The oxygen tank is by the bedside with tube and mouthpiece attached, ready for its administration. Five gallons is given every three to six hours, from the beginning of the attack, unless otherwise called for more frequently and in larger quantities. The blood must have oxygen and when the lung or lungs are engorged with the inflammatory fibrinous exudate and a vast area of the air vesicles obstructed so that the blood is very poorly oxygenized, the whole system is weakened, the toxemia is increasing, the muscles of the heart become so poisoned with the toxemia and weakened and worn out from the overwork cast upon it from an obstructed circulation that it needs something more than a whip, like stimulants, to keep a lame and crippled organ in motion. Oxygen helps to prevent, to a great extent, this condition, by keeping the blood better oxygenized, thus holding in check the increasing toxemia and thus assisting the heart to better fight its battle. At times it becomes necessary to give the oxygen continuously for hours, until the embarrassed heart and respirations show improvement and the cyanotic condition disappears. Oxygen, given throughout the course of the disease, and a plenty of it in the manner here outlined, can do no harm, but I can assure the reader that it will do much good.

I have avoided discussing the treatment of complications, as this would carry me into writing a much longer paper than is here intended.

With the treatment as above outlined and intelligently followed both by scrupulously observing changes occurring in the course of the disease and the usage of good judgment in applying the proper remedies, the rate of mortality should be much reduced.

GASTROPTOSIA.[1]

BY A. ROSE, M.D.,

OF NEW YORK.

Gastroptosia, not Gastroptosis,[2] is a subject of vast importance, as has been proved by the avalanche of literature it has caused during the last decade.

The word gastroptosia, correctly translated, means abdominal ptosis, not necessarily ptosis of the stomach alone; this latter would be stomachoptosia. The word gastroptosia is a good term, for, as far as I know the literature, all writers agree that there is, as a rule, not alone one abdominal organ descended, although one may be more displaced than the other. The word gastroptosia, for another reason, is a good term, because it includes the relaxation of the abdominal walls.

The tone, the activity of the abdominal muscles aids in fixing the abdominal organs in their physiological position. Relaxation of this apparatus forms a factor in gastroptosia, and in therapy it is the first factor we have to consider.

Enteroptosia is ptosis of the abdominal viscera in general, or, so far as literary translation is concerned, it may mean ptosis of viscera, not necessarily of the abdomen alone, certainly we may understand by this term ptosis of the bowels, but this is arbitrary. Splanchnoptosia means also ptosis of viscera, not abdominal viscera exclusively. Splanchnon can, for instance, mean the heart. I simply give facts which are worth knowing when we have science at heart.

Gastroptosia is identical with relaxation, or, which means the same, with atonia; gastroptosia is atonia gastrica. Those who have used the word atonia gastrica in the meaning of motor insufficiency of the stomach have caused much confusion.

Atonia gastrica may exist without motor insufficiency.

Myasthenia gastrica is a word without any definite meaning. Motor insufficiency is the disproportion between the capacity of the muscular forces of the stomach and the demand for labor on these forces. Such insufficiency may occur under certain circumstances in a healthy stomach, when the mass of the ingested food is too large, or the nature or condition of the ingesta unsuitable. Atony may cause insufficiency, but atony is not itself insufficiency. Atony may exist without insufficiency when the resistance at the pylorus is subnormal. Atony may be caused by insufficiency.

There exists ectasia or dilatation of the stomach, which we have to distinguish from gastroptosia, but there is no gastroptosia without dilatation. Gastroptosia depends on relaxation, and relaxation of the fibers of muscles means elongation of the fibers, therefore relaxation is, *eo ipso,* dilatation.

Glénard's whole theory of enteroptosia is based on the relaxation of the suspensory ligaments of the intestines, especially that of the transverse colon, and Stiller, the discoverer of the floating tenth rib, says that splanchnoptosia is a descent of the atonic dilated stomach, of the colon, especially of the transverse portion, the kidney, exceptionally of the liver, or the spleen; a descent which has developed mostly in tender age, in consequence of general relaxation. As a matter of course such general relaxation may be congenital or acquired.

Of practical importance is the relation between gastroptosia and gastric and nervous symptoms. We all accept now the view that many cases which formerly were classified as nervous dyspepsia are cases of gastroptosia with gastric and nervous symptoms, *ex juvantibus* any doubt can be removed.

All forms of anomalous gastric secretion may be associated with gastroptosia and as the very exact investigations of Dr. C. T. Graham Rogers, in Manhattan State Hospital, West, Ward's Island, have demonstrated, relief from anomalous secretion and motor insufficiency may promptly follow after gastroptosia has been relieved. I wish I had time to present the records Dr. Rogers had the kindness to place at my disposal showing the close relation of anomalous secretion and anomalous motor functions to gastroptosia. He confirms with scientific accuracy all I have mentioned in numerous publications.

It will simplify matters if we keep in view that the principle in the treatment of gastroptosia is relief from relaxation; first of all of abdominal relaxation, by means of support of the abdominal walls, and this can best be done in most instances by strapping in the way I have suggested.

In their enthusiasm over the study of bacterial, chemical and toxic processes many physicians of the present time have overlooked the mechanical conditions of the abdomen.

In the case of gastroptosia with gastric and nervous symptoms let us, first of all, relieve this condition of relaxation, no matter what the analysis of the contents of the stomach may show. Very often strapping of the stomach alone, without any other treatment, will restore the secretory and motor functions to a normal state. I do not mean to say that medical treatment is to be excluded in any case, but without the mechanical support all medical treatment may be in vain.

Gastroptosia may play a part in diseases of the organs of respiration and circulation.

Allow me to quote a case which I have repeatedly quoted, but which illustrates these relations to perfection.

This is a case reported by Dr. Groddeck, of Baden Baden: An elderly gentleman suffered for several years from attacks of vertigo and unconsciousness. Almost daily, sometimes hourly, and even at shorter intervals, the alarming symptoms appeared. The frequency of the pulse was

1 Received for publication March 21, 1904.

2 A feminine noun which ends in sis, xis and psis, as the second component, remains unchanged when the first component is a preposition, as, for instance, proptosis, periptosis, diagnosis; but if the first component is not a preposition, then in composition the ending is changed into sia, as eupraxia, apraxia, palingenesia, hierognosia, and also gastroptosia.

27 to 31 beats in the minute; only every second contraction of the heart caused pulsation. All the physicians who saw the case diagnosticated, quite correctly, myocarditic affection and treated him accordingly, but without success. The enormously distended belly of the patient had not been taken into consideration until Dr. Groddeck paid attention to it. The reduction of the size of the belly, although it did not cure the diseased myocardium, was followed by cessation of the attacks of vertigo and unconsciousness. The size, the weight of the belly, having been reduced, the work of the heart was materially relieved to such an extent that even the imperfect contractions were sufficient to fill the brain with the necessary quantum of blood. It is sometimes of more importance in cases of heart disease to examine the abdomen than to distinguish the fine points of the auscultatory symptoms.

I could add just as striking examples from my own practice. I could refer to my experience on seeing a patient before a medical society. Every one present studies the auscultatory symptoms, but not a single one takes notice of the most remarkably pronounced gastroptosia. They all speak of different remedies to improve the circulation, not a single one has an idea of the most important of all the remedies in the case, the support of the abdomen.

A very interesting phenomenon has been observed by Mangelsdorf. He found that every attack of migraine was accompanied by dilatation of the stomach and that repeated attacks of migraine led in the course of years to permanent change in the tonicity of the stomach, and also that there existed relations of epilepsia to gastroptosia.

Many observers of the last few years have shown that gastroptosia deserves much greater consideration than has been accorded to it.

THE TREATMENT OF TUBERCULOUS TESTICLE.[1] [2]

BY JOSEPH B. BISSELL, M.D.,

OF NEW YORK.

MUCH has been written on the small and rather limited subject of the treatment of tuberculous testicle in the past decade. Surgeons of ability and prominence on two continents have published valuable articles relating to it. The disease is probably not more prevalent than formerly, but modern methods of the treatment of tuberculosis of the lungs have drawn attention to the disease as it exists in this and other organs of the body.

Before deciding upon the treatment of this diseased condition one should consider the functions of the gland and its correlated organs, and the result which various kinds of treatment and operations suggested may have, not alone upon the organ involved, but also upon the patient and upon his future health and well being. The mere removal of one or both testicles is a comparatively simple and safe operation, but its effect upon the individual does not end with the operation and the discharge of the patient as cured. A number of cases of hopeless mental disease and some suicides have been reported as following the operation of double castration, if indeed they are not a direct result of it. A good working idea of the physiology and anatomy of the organ, together with the pathology of this infection, ought to be taken into consideration, and the physiology of the testicle as a whole must influence the surgeon in his choice of operation.

The testicle has two functions: The first, the creation of the spermatoza; and the second, and, as far as the well-being of the individual is concerned, the most important, is the formation of the internal secretion. This function resides for the most part, if not entirely, in the gland proper. The importance of this internal secretion in the metabolism of the body is well known. We all realize the psychical and physical changes produced by the removal of both testicles. The influence of their loss is shown in cases of cryptorchism, or where both testicles are lost before puberty, grave mental states and diseases having been induced by double castration even late in life.

Dr. J. B. Murphy in an elaborate and interesting article on "Tuberculosis of the Testicle," published in the *Journal of the American Medical Association*, for 1902, gives a full and simple description of the blood supply of the organ. The spermatic artery bifurcates at the border of the epididymis, and sending in its tortuous branches, suddenly becoming very much smaller in caliber, causes a sluggish and much obstructed blood supply as compared with the circulation in the testicle itself. Tubercle bacilli in the blood current, their most common way of entering the tissue, lodge more readily in the structures nourished by this slowed and impeded circulation than in the more rapid and unobstructed current in the testicle gland. Then if the epididymis, as is frequently the case, has been the seat of a preceding inflammation, gonorrhoeal or otherwise, or of a trauma, there is a nidus ready for the development of the bacilli, and tuberculous foci appear without much difficulty. This is the theory of Saltzman, who has studied the subject carefully for some years.

The most frequent channel of entrance for this bacillus into the tissues of the human body is the respiratory tract, the next most common the gastro-intestinal; then the genito-urinary mucous membrane, and lastly the skin. But whichever way it takes to get to the place of development there must be some local condition predisposing to the growth of the microbe, and the development of the disease at this point. In the testicle it is usually found to be an old or a recent epididymitis, or an injury. That this is the cause of a spot of weak resistance in the tissues which in the presence of the germ gives rise to a focus of tuberculous tissue, has been repeatedly demonstrated.

[1] Read at the New York Academy of Medicine, Genito-Urinary Section, March 16, 1904.

[2] Received for publication March 25, 1904.

In the majority of the cases recorded by Murphy he found the epididymis to contain the primary genito-urinary tuberculous infiltration, or at least the dominant focus. Such being the case the surgical indication is simple, clear and imperative. The immediate removal of this lesion would save the patient from a source of infection. The author's experience and teaching agree with that of Murphy. Unfortunately a review of the opinions of many other surgeons, who have recently written on this subject, shows a preponderance of views in favor of its being a secondary infection. Orville Horwitz, in a paper on the treatment of 96 cases, found a primary infection in some, but for the most part the disease in the epididymis was secondary to foci elsewhere. Irwin Abel in two recent papers found it to be usually secondary. E. Laval finds it secondary in most of his cases. In a paper of two years ago, Dr. H. W. Morton, of Brooklyn, apparently holds similar views. Dr. Lejar, of Paris, thinks most of the cases, if seen early enough, would show a starting point in the epididymis. The English surgeons believe for the most part that the disease is rarely primary in the epididymis.

Authors differ decidedly as to whether the disease, as far as concerns the genito-urinary tract, is an ascending or descending infection; that is, beginning in the epididymis and going upward to the vas, seminal vesicles, prostate, bladder and uretha, or whether it begins in one of these locations and reaches the epididymis in descending. Cayla in one hundred post-mortem sections, concluded that tuberculous diseases in the genito-urinary system began higher up. König in 1902, reported 31 out of 45 of his operative cases where the higher points were involved. Recent observers agree in the general view that the testicle body itself is, as a rule, involved secondarily to the epididymis. If it could be proven that genito-urinary tuberculosis in every case began in the epididymis, or even in the testicle, the surgical indications would again be direct and absolute, and if followed early enough genito-urinary tuberculosis could be cured, at least theoretically.

Another important factor must enter into our consideration of treatment of this disease, that is, the prognosis of tuberculosis as it affects other organs of the human body. It is well known that the majority of the people in this vicinity have at one time or another had greater or smaller tuberculous infections. In the autopsies in this city in deaths from all causes, it has been estimated that more than 70 per cent. of the bodies showed evidences of having suffered from pulmonary tuberculosis, many of these having scar tissue at the site of the old tuberculous inflammations. We must always take into our consideration therefore the possibility of a cure of the tuberculous process "by nature" so-called.

Treatment may be divided into constitutional or general, palliative and radical. Whichever of the latter two divisions is followed, the constitutional treatment of tuberculosis is always to be carried out. In a number of cases which were not operated upon, the patients were made comfortable for years by attention to their general health, and by means of the modern hygienic treatment for tuberculosis, carried out to the best of their ability. Nature unassisted does so much to cure tuberculosis in other organs that her efforts to prevent the growth of the bacilli in the genito-urinary tract should be helped by every means in our power before resorting to mutilations or destructive procedures. Even after we have made up our minds that it is a conservative measure to destroy or remove a certain amount of human tissues, we should still rely greatly for successful results, both immediate and ultimate, upon happily conceived and carried out general treatment, often best left to the tuberculosis specialist.

Palliative treatment is to be used where radical treatment is contraindicated. It consists principally in rest and support of the part, irrigation and cleansing of any sinus, opening and drainage of abscesses, and treatment of any symptoms which are causing temperature or distress. Mauclair's operation is on the border line between palliative and radical treatment, and in any case is useless, often harmful, and not to be recommended. It consists of excising a portion of the vascular supply of the testicle along the course of the cord. None of the various injections into the tuberculous focus recommended has been of value. Usually they increase the difficulty of proper treatment by producing a mixed infection, and finally necessitate operative interference under unfavorable local surroundings and conditions.

A palliative treatment, which seems to have great promise in it, is that held out by the use of the X-rays, radium, and the fluorescent solutions. In tuberculosis of the skin and glands the favorable results reported from this procedure promise much for the cure of tuberculosis of the testicle. My personal experience with the X-ray is disconnected and limited, and is disappointing, probably for these very reasons. Dr. W. H. Morton, of Brooklyn, who has possibly more experience with this treatment than any one else, writes me, in answer to a request of mine for information, as follows:

> I have never treated a case of the organ you refer to, but I have treated a great many cases of local tuberculous glands on the neck and side of the face near the ear and upper parts of the shoulder; five cases, at least, with complete success. Some way all my cases have been of the neck and surrounding regions. There is a steady retrogression of the grandular trouble and a final cure, depending upon the use of the X-ray, though I must say I always use quinine, esculin or fluorescin at the same time, internally, and at present believe that if one can follow up the cases carefully, that the radium will do still better work than the X-ray. My own faith in the treatment of these cases and my own success has depended upon the use of artificial fluorescence. (See *New York Medical Journal*, Feb. 13 and 20, 1904.)

The well-known fact that other glands infected with tuberculosis can be restored to normal by this means is proven, and is suggestive of

help for the same disease in the genito-urinary organs, and more particularly the testicle.

The radical treatment consists in operations of two classes. Orchiectomy or epididymectomy, either of which may be partial or complete, and either may be combined with excision of the whole or part of the vas, together with exsection of the seminal vesicles, if one wishes to go that far. Orchiectomy with removal of the vas is the most complete, especially if the seminal vesicles are removed at the same time.

Castration is easy of accomplishment, and the immediate result is good, at the worst a temporary sinus may remain, usually closing in a few weeks. But the ultimate result to the patient is not always satisfactory. The possibility of grave mental disease as a result of castration is always present. A patient deprived of both testicles, as stated earlier, is mutilated by more than the loss of his fecundating faculty. The mental impression created by such loss is not all the harm done him, serious as it is. The loss of the testicles carries with it the loss of the internal secretion, which is necessary to the health, mental and physical, of the normal male. The removal of one testicle destroys this to a certain degree. Moreover, it is not usually necessary in order to remove the tuberculous foci to take out the testicle. It has been shown by such observers as König, Cayla, Duplay, Lejars, Senn, Horwitz, Murphy and others that the lesions as a rule reach the testicle body last of all. Dr. Lejars goes so far as to save all of the body of the testicle possible, excising portions where it is infected and suturing together healthy edges of the rest of the gland, thus preserving as much of it as possible for the sake of this internal secretion.

After removing the diseased epididymis, Dr. Lejars in suspected cases does an exploratory orchidotomy, and if any nodules are seen they are excised, the cut edges brought together with buried sutures and the halves of the split testicle reunited. If it is decided to do so, after an epididymectomy or orchiectomy the vas can also be removed by following the cord to the inguinal canal, pushing back the peritoneum by a blunt dissection down to the posterior surface of the bladder, and exsecting the structure, a painstaking and somewhat tedious dissection. The cord, if diseased, is indurated and thickened, and can be easily followed.

Von Brunnen's procedure of grasping the cord after dissecting out the testicle, and pulling by main strength, thus avulsing it deeply from its attachments, seems to be unsurgical and dangerous, as likely to produce hemorrhage and possible infection. It is condemned by Murphy and by Horwitz.

There remains then for the surgical consideration the operation of epididymectomy. The removal of the diseased epididymis has these advantages. It does the least damage to the testicle functions and to the health of the patient. It removes as a rule the foci of disease. It does not destroy sexual vigor. If the disease is of the ascending variety the operation, if done early, is an absolute cure. Even after the vas and the seminal vesicles are indurated and enlarged, the vesical, vesicular and prostatic symptoms are relieved and the tenderness and induration in the cord disappears, or nearly so following this operation. This is explained by the fact that the function of the cord ceases, and therefore its activity. At the same time the infective products, derived from the tuberculous epididymitis, are cut off. In all of Horwitz's epididymectomies, even where they were double, there was no atrophy of the testicle, nor loss of sexual power. The production of the internal secretion, as it resides in the body of the gland, is not destroyed.

Excision of tubercle nodules in the gland proper interferes with its function to a much less extent than would be expected from such an operation, depending, of course, upon numbers of tuberculous foci, and the amount of tissue infiltrated. Epididymectomy to the exclusion of orchiectomy has only been popular in the last fifteen years. Scoville in 1852, and Duplay later, recommended complete extirpation of the diseased epididymis and excision of tuberculous nodes in the gland where found, as did Syme and Malgaine before them. The results, probably because of their lack of knowledge of antiseptic surgery, were not satisfactory. Of late years the success of the French and Italian surgeons again brought the operation into good repute.

The operation is a simple one, and after the first incision is merely a blunt dissection. An incision is made on the outer and posterior surface of the scrotum down to the diseased epididymis, if possible avoiding rupturing into the diseased tissues. The tumor is dissected off from below upward, and the cord tied high up. Because of oozing from the numberless little vessels impossible to tie off, and because some bacteria may get into the wound from the difficulty of satisfactory sterilization of the skin of the scrotum, it is wise to leave in a rubber tissue or silkworm drain for thirty-six to forty-eight hours. After removing the epididymis the nodules in the tunica albuginea can be excised, or one can do an explorative orchidotomy, splitting the testicle longitudinally at its posterior border and exsecting any foci, if they are present. The wound usually heals quickly on taking out the drain.

The following cases have been taken as being more or less typical of the varieties of tuberculosis of the testicle as they present themselves for treatment.

Case I.—A. L., fifty-two years old, marble cutter. January 3, 1902. Ten years ago began with hydrocele of left side. This was tapped, injected and healed. Now both epididyma are enlarged and indurated. On left side only the globus major seems to be affected; both seminal vesicles indurated and tender; right testicle is twice the normal size and tender. No frequency of micturition except slight during the day. Urine contains tubercle bacilli, as does the sputa. The urine is clear, both glasses contain a few flocculi;

heavy amount of albumin; at times the epididyma are as large as pigeon's eggs, and fluctuate at various points, but subside again. He is still under treatment. Works about his usual number of hours. No operation. General tuberculous treatment.

Case II.—F. A., fifty-three years old; sea captain. September 28, 1895. Three years ago first noticed frequency and pain in urination, lump appeared in the epididymis about same time. Hydrocele of right testicle, which has been tapped repeatedly, finally leaving a sinus connected with the globus minor. This healed in a few months after last tapping. Tubercle bacilli found in discharge from the sinus and repeatedly in the urine. Later the urinary symptoms, principally hematuria, became very pronounced until the urine seemed to be almost clear blood at every urination. He became very anemic, went to a sanitarium for treatment, and died on the operating table September, 1899. In this case the lesion began higher up. No operation upon testicle advised.

Case III.—W. D., lawyer. This patient was first seen in fall of 1887, in consultation with his physician, since dead. He had an acute urethritis and orchito-epididymitis, which followed the passage of a sound. The inflammation suppurated, and was opened and drained. Following this there remained a small sinus, which was troublesome only because of the slight seropurulent discharge. The opening would close up, a cyst would form, and have to be opened occasionally to let out the discharge until after a few years it closed and has remained so for the past eight years. He has had purulent urine for years, which, however, has not given him any further trouble. It contains tubercle bacilli, as did the discharge from the scrotal sinus, and occasionally his sputa. The testicle has almost entirely disappeared. He lives out of doors, and is very active in all his pursuits; he rides, drives and travels under the most favorable conditions; he still has purulent urine; no frequency or pain in micturition; otherwise he is in good health.

Case IV.—W. H. D., forty-nine years old. Tuberculous family history. One of his children died of tuberculosis. Has had syphilis. Called for treatment in March, 1901. Has a lump size of peanut in left globus minor; nodular vas. Noticed the lump for the last year, not tender, fluctuates slightly. Has been taking K.I. for it without result. No bladder symptoms, but urine is purulent. No tubercle bacilli found. Seminal vesicles thickened. Prostate has a few nodules in it. Takes cod-liver oil and hypophosphites. At times the lump becomes painful and tender, but subsides again. His condition remained about same at his last visit in January, 1904. General health good; appetite good; functions normal except loss of sexual vigor. Has premature ejaculation; advised against operation.

Case V.—F. D., elevator boy, March 18, 1899. Treatment, orchiectomy for tuberculosis of testicle, which healed poorly, leaving sinuses. These finally closed up after several weeks' treatment with irrigation. During this time it was noticed that the other epididymis was enlarged and tender, but he gradually improved, had no noticeable symptoms of tuberculosis in the genito-urinary tract elsewhere, and disappeared from observation. March 8, 1904, almost five years later, called to see me because he had pain in his left side due to a fall. He now has a small sinus with slight discharge connecting with the globus minor of the left epididymis. He had not noticed anything wrong there until his attention was called to it to-day. He is quite anemic, but appetite is good, and he is always at his work. His urine is clear; has no frequency of or pain in micturition. Advised epididymectomy, to which he has consented.

Case VI.—H. B., thirty-nine years old; engineer; heavy drinker; April, 1887, had several attacks of pleurisy with effusion; several attacks of bronchitis and delirium tremens; has slight consolidation of the right apex; has been under treatment for years for various injuries and diseases; dislocation of shoulder; again, later, fracture of clavicle and fractured ribs, etc., usually following an alcoholic debauch. In April, 1897, he returned to my care in his forty-ninth year for abscess and sinuses of the right scrotum. I did an epididymectomy, and he healed rapidly. He regained his health, disappeared for several years but returned to my care at Bellevue Hospital last fall with pulmonary tuberculosis of both apices. His scrotum had remained well, and he had no symptoms of bladder infection, except slightly increased frequency of urination, but with no pain; the other testicle was intact. He died of tuberculosis a few weeks later.

Case VII.—B. F., twenty-seven years old, clerk. December 3, 1897. Gives a history of hard chancre eighteen months ago followed by secondaries. Repeated attacks of urethritis; is a heavy drinker; has tuberculous family history; one sister and his mother died of it. In January, 1898, right-sided epididymitis, which apparently involves the testicle. In February, epididymis still swollen and tender. No vesical symptoms. At times the induration and tenderness of both sides are quite marked. Once during the last six years a fluctuating point in the right epididymis was opened, pus evacuated, and a sinus remained for several months. His present condition is fairly good, but both epididyma are thickened, and enlarged to several times the normal. The prostate is thickened with nodules present in it; seminal vesicles thickened. He has, however, no bladder symptoms and attends to his work, which is indoors. He has taken cod-liver oil and hypophosphites with the general hygiene for consumptives as nearly as he could for years. He has had no symptoms of syphilis and no treatment for that disease for several years. He objects to any operation, and under the circumstances, in view of his general condition, and the fact that the disease has progressed so slowly, I have not urged it. I think, however, if he began to have pain, rise of

temperature, and local suppuration, I would insist upon his deciding upon a double epididymectomy at once or not at all.

Case VIII.—George, nineteen years old. March, 1899. Was operated on for radical cure of hernia several months ago. Has a tuberculous family history; has enlarged cervical glands, one of which was removed and found to be tuberculous. For past five or six weeks his right testicle has begun to swell and he has some pain in it. Examination shows no involvment of the cord, the seminal vesicles or the prostate, but as the swelling was increasing in size, was becoming more and more painful, and the disease had evidently begun in the testicle body, the epididymis being slightly affected, if at all, it was decided in spite of his glandular infiltration to remove the organ. Wound healed up by primary union. I saw him within the past month; he has no genito-urinary symptoms, and is in good health aside from those cervical glands which, although he is working as a hospital orderly, he has still unoperated upon.

From a study of nearly 120 cases, and the suggestions derived from various writers on this subject, I would draw the following conclusions for the treatment of tuberculosis of the testicle:

Epididymectomy is the operation of election; it should be done early; it can be done with the best expectation of relief even if there are higher foci; it is not always necessary to remove the higher foci to obtain relief from their symptoms; it is indicated following a preceding castration where the remaining testicle is not involved, or if so, not very extensively.

Orchiectomy is to be performed where the testicle is markedly or alone involved (rare), or where it has broken down, and is a menace to the health of the patient, or where its removal will relieve him of a drain upon his system, and only where epididymectomy is contraindicated.

Exploratory orchidotomy following epididymectomy is indicated where single foci or a few nodules are found or suspected.

Whichever operative procedure is chosen special attention must be paid to the modern hygienic dietetic treatment for general tuberculous disease.

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COCAINISM.[1]

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The cocaine habit is a modern ailment and a most peculiar one, presenting many phases of great interest to the physician. It distinctly differs from morphinism in important respects. Cocaine is more exhilarating than morphine, but as an addiction has less tenacity of grip. Its effects are more immediately startling, but the addiction can be more readily cured.

Cocaine dilates the pupil while morphine contracts it. In many ways cocaine is a physiological antagonist to morphine, and yet they are frequently combined. In fact I have treated but few cocaine patients who did not also use morphine. This comes about through the effort of morphine habitués to abandon the use of the drug by substituting cocaine. The result is that the patient has two drug addictions instead of one, and the last state of the man is worse than the first. Another way in which this habit is acquired is by the use of nasal applications containing cocaine. I am satisfied that prescriptions of this kind are responsible for many serious results. I have treated patients who took the drug by insufflation exclusively, and who would be satisfied with no other method of administration.

It is a peculiar fact that drug habitués are almost as insistent upon the precise mode of exhibition as upon the character of the drug. Whether he takes his favorite drug by hypodermic injection, or by rectal suppositories, or via the nasal mucous membrane, or the stomach, he will strenuously insist upon the particular route he originally hit upon. Why, for instance, a man should spend unnecessary time and money on the use of rectal suppositories for systemic effect, when he could get the same results by simply swallowing a pill, is one of those psychological problems that it would be interesting to consider at length. Cocaine habitués usually employ the hypodermic needle, and as the action of the drug is very transitory, they are obliged to devote their days and nights to perpetual puncturing, if they would maintain drug action.

Cocaine produces a particularly injurious effect on the skin, causing abscesses and other sores. Consequently the industrious cocaine user soon has a large area affected. One of my patients had two arms so thoroughly covered with cicatricial tissue, as the result of this practice, that there was scarcely a point on them where a needle could be inserted. One woman, having exhausted all the available area on her arms and legs, utilized the skin across her chest. When she came to the sanatorium for treatment I found a strip four inches wide across her upper chest that presented the aspect of raw meat.

Hallucinations are often present in cocainism. These frequently relate to the skin. The patient will believe, for instance, that insects are burrowing in the cuticle, and will often make it sore in his efforts to dig out the imaginary parasite. He may also have hallucinations of hearing. Imaginary voices will continually reproach and advise him, even his most trivial acts being criticized by the "voices." One of my patients, a thoroughly educated physician, had both these symptoms to a marked degree. He believed that the parasites were not only burrowing in his skin, but infested his clothing and bed. Consequently he would take every opportunity to change his clothing, or move from one bed to another, in an effort to escape from them. On one occasion he went to an upper room in the house where he was living and, after taking off all his clothing, went down to the ground on a fire es-

[1] Received for publication March 16, 1904.

cape on the outside of the building. After he was restored to health he could not only remember all that he did, but he had a clear recollection of the reasons that impelled him. The "voices" told him that if he would take off his vermin infested clothing and go down to the ground he would there find a clean suit of clothes. By the time he reached the ground, the cool morning air against his unprotected cuticle caused an "arrest of thought," and it dawned upon him that he was standing on the lawn, clad solely in native buff, and unadorned by the arts of man. He accordingly made as rapid strides toward shelter as his unhampered limbs permitted.

Emaciation is almost a universal symptom. A recent patient of mine, who used both cocaine and morphine, came to the sanatorium weighing 102 pounds, and after the withdrawal of the drugs her weight increased to 150 pounds, which was her normal weight.

Cocaine victims are greatly distressed by insomnia. Curiously enough they employ cocaine to promote sleep, although its action is a direct antithesis to that of hypnotics. The reason for this peculiar use of the drug is that these patients are sufficiently comfortable for sleep only when under its influence. It has no hypnotic action, but relieves the distressing drug crave, and thus permits sleep to some extent.

While all drug addictions require sanatorium treatment, cocainism is one of the most readily cured. Although the results of this addiction are often appalling in the extreme, yet it is remarkable how promptly these patients usually return to a normal state, after the withdrawal of the drug under proper medical care.

THE EXTRAPERITONEAL RELATIONS OF THE APPENDIX VERMIFORMIS TO THE POSTERIOR SURFACE OF THE CECUM, WITH THE REPORT OF A FORM HITHERTO UNDESCRIBED.*†

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The case to which attention is invited in this article presents a very unusual and, so far as we can find, a unique anatomical placement of the vermiform appendix.

A girl of twenty years, a patient of Dr. I. N. Oakes, of North Ridgeville, Ohio, was referred for intercurrent appendicectomy. The patient had suffered from three attacks of what appeared to be appendicular colic. The first attack was in June, 1903, and was manifest by nausea followed by pain in the right iliac fossa; the pain was not severe, and disappeared in two days; there was no fever. About a month later she had a similar attack, but even less severe. On August 20, she suffered a third attack, manifested by nausea, together with pain in the right iliac fossa, the pain being somewhat more severe than on the former occasions, and persisting for five days. On this occasion, as on the others, there was no fever, no chill and no vomiting except once immediately after taking a dose of whisky. Turpentine stupes were applied in each instance. In none of the attacks was she confined to bed, although in the last attack she felt pretty miserable. These facts in the clinical history are mentioned, as they seemed to indicate the absence of a definite inflammatory condition. Since the last attack, however, there persisted a slight degree of sensitiveness on deep pressure in the region of the appendix. The patient lived in the country a considerable distance from ready communication, which fact, together with the manifest tendency toward increasingly severe recurrence, was the occasion for operative interference.

The operation was performed at Charity Hospital, Cleveland, October 21, 1903, and presented nothing of interest aside from the anatomical condition. The cecum and appendix were readily located, there being no adhesions. The appendix emerged from the cecum at the point noted in the large majority of cases, a little internal and slightly posterior to the projection of the caput, as in the classical third type of the cecum described by Treves.[1] Curving gently upon itself in a downward and backward direction, what appeared to be the tip of the appendix seemed attached to the cecum by an adhesion about 1.5 cm. below the appendiceal base. This at first appeared to be the entire appendix, and measured 2.5 cm. There was a mesoappendix arising from the under or left layer of the mesentery of the extreme distal portion of the ileum. The mesoappendix was about 2 cm. long at the base of the appendix, and was about 4 cm. along its free border, reaching what appeared to be the adherent tip of the appendix. This free border was nowhere attached to the parietal peritoneum, so that the apparently adherent tip of the appendix could be completely surrounded by introducing the finger from the outer side underneath the appendix, beneath the mesoappendix, and out again below the free border of the mesoappendix.

The lack of any adhesions along this free border of the mesoappendix in the presence of what appeared to be an adhesion of the tip of the appendix was the first consideration that led to an understanding of the actual condition present. The end of the cecum was drawn upward, making prominent the line of reflection between the cecal and parietal peritoneum. On careful inspection it was now seen that what appeared to be the adherent tip of the appendix was merely a constriction narrowing the appendix to about one-fourth its proximal diameter. From this constriction the remainder of the appendix was seen in dim outline to lie extraperitoneally along the cecum as far as the line of peritoneal reflection mentioned, from which point it was lost to view in the retrocecal connective tissue. The extraperitoneal portion of the appendix was 1 cm. long. A short incision was made along the line of peri-

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toneal reflection and the retrocecal connective tissue separated along the appendix to its tip. This portion of the organ was 1 cm. long, making the entire appendix 4.5 cm. in length; the free mesenteric portion 2.5 cm., the extraperitoneal portion 1 cm., the retrocecal portion 1 cm.

The organ was readily removed. The mesenteric portion was 6 mm. in diameter, narrowing down at the constriction to a trifle over 2 mm.; beyond this point the diameter of the extraperitoneal and retrocecal portions widened out to 8 mm. The mucous membrane of the portion distal to the constriction was slightly congested, but this, together with the slight general thickening of the wall of the same portion, was the only gross evidence of inflammation. There were no adhesions. There were no foreign bodies. It is possible the distal thickening was due to muscular hypertrophy through efforts to expel mucus from this portion through the constriction. At all events the inflammation was slight and had not extended through the appendiceal wall.

That we have here a primary anatomical condition and not a condition resulting from inflammatory adhesions, there can be no reasonable doubt. An acute inflammatory condition gluing the appendix to the cecum would also have left the appendix adherent to the parietal peritoneum against which it rested posteriorly, which did not occur. An inflammatory process would undoubtedly have bound down the distal portion of the mesoappendix to the parietal surface against which it rested, but the distal border was not adherent and the finger could be freely run under it. If the extraperitoneal appearance of the middle portion of the appendix had been produced by recent adhesions, one would expect to find the remains of peritoneum on the cecal side of the appendix, but this portion of the organ was separated from the cecum only by loose connective tissue. Finally, no explanation along the line of inflammatory adhesions can possibly account for the location of the distal centimeter of the appendix lying in the retrocecal connective tissue.

The most frequent peritoneal relation of the appendix is where the entire organ lies freely in the peritoneal cavity supported by a mesoappendix extending only along the proximal half of the organ, the distal portion being without a mesentery (Quain,[2] Sappey[3]); exception is taken to this statement by more recent investigators, notably Monks and Blake,[4] the opinion prevailing that the mesentery extends further along the appendix in a much larger proportion of cases than was formerly believed. An extraperitoneal relation of all or a part of the appendix is quite rare, except as the result of an inflammatory process.

Of 577 cases mentioned by Stroud,[5] only nine were partially or wholly extraperitoneal. Bryant[6] mentions three out of 144 cases examined by H. M. Biggs. Turner, quoted by Bryant,[6] found in 105 examinations four partially, and two wholly extraperitoneal. An examination of the records of 480 autopsies, performed in the Pathological Department of Lakeside Hospital, affords a series of 440 cases in which the vermiform appendix was free from gross inflammatory conditions or operative interference. Among these 440 cases only four instances appear in which any portion of the appendix was extraperitoneal, three of which occurred in the last few autopsies. Only one of these cases sustained a relation to the posterior surface of the cecum, as is mentioned later.

There have previously been recorded several types of extraperitoneal relations of the appendix to the posterior surface of the cecum and ascending colon, all of which are so well recognized that they merit no extensive reference list.

1. As the end of the cecum is drawn forward and upward, the appendix may be seen to be extraperitoneal, lying against the posterior surface of the cecum. There is, of course, no free mesentery. It is made possible only in the case of a short or much curved appendix, or where a considerable portion of the posterior cecal surface is covered by peritoneum, and the cecoparietal peritoneal fold is high up under the upper portion of the cecum or lower end of the ascending color (Deaver[7]).

2. A second form occurs when only the proximal portion of the appendix is in extraperitoneal relation to the posterior surface of the cecum, while the distal portion to a varying degree projects freely into the peritoneal cavity, and is completely invested with the peritoneum. There may or may not be a short mesentery extending from the cecum or ileum to this free distal part of the appendix. In such cases the distal portion may be thought at first to be the entire appendix, but it is noted that the longitudinal bands of the cecum converge on the real, not the apparent base of the appendix, and on careful inspection the remainder of the organ can be seen beneath the posterior peritoneal covering of the cecum. Such an instance is mentioned by Holmes,[8] and a figure given by Huntington.[9]

3. A third variety is seen where the proximal portion of the appendix is situated extraperitoneally against the posterior surface of the cecum, while the distal portion, instead of being free as in the second variety, passes upward along the posterior aspect of the cecum and ascending colon beyond the line of the cecoparietal peritoneal reflection, and lies in the connective tissue behind the large gut, entirely out of relation to the peritoneum (Huntington[10]).

4. Another relation exists when the cecoparietal peritoneal reflection is very low down, close to the tip of the cecum, so that the entire posterior surface of the cecum is extraperitoneal, and lies in direct contact with connective tissue. An appendix in this situation lies entirely in the retrocecal connective tissue, bearing no direct relation to the peritoneum (Huntington[11]).

5. A fifth variety, a modification of the third or fourth, is observed when the tip of the appendix, for a varying length, projects beyond the cecum on either side from the retrocecal connective tissue in which is buried all the remainder of the appendix, or at least its distal portion exclu-

sive of the tip. The projecting tip is, of course, completely invested by peritoneum. Such an instance has been mentioned by Deaver,[12] and has also been recently observed by the writer.

6. Still another form is seen when the tip of the appendix lies behind the peritoneum against the posterior wall of the cecum, the proximal remainder being invested with peritoneum and supported by a mesentery that may be entirely free, or more or less adherent to the cecum. The extraperitoneal aspect may vary from what appears to be a mere adhesion, to a degree involving the entire distal half of the organ. In the first instance it resembles the case described by Treves,[13] mentioned later, in which the tip was adherent to the under surface of the mesentery of the ileum instead of the posterior cecal surface. The other extreme has been recently observed in the Pathological Department of Lakeside Hospital by Dr. D. H. Dolly, resident pathologist, the entire distal half of the appendix being extraperitoneal.

By reference to the description of the case under consideration, it will at once be seen that the situation of the appendix bears a certain relation to the third variety mentioned above. This relationship, however, is confined entirely to the distal half of the appendix, the first centimeter of which lies extraperitoneally against the under surface of the cecum, while the extreme centimeter or tip of the organ lies in the retrocecal connective tissue above the cecoparietal peritoneal fold. The proximal half of the appendix lies within the peritoneal cavity, and has an unadherent mesoappendix with a free margin, thus resembling in a degree the sixth variety described. It has been impossible for us to find, after a careful independent search, any distinct reference to a similar condition as an anatomical entity, not the result of an inflammatory process.

The nearest suggestion we can find to the peritoneal relations existing in this case is a very general statement given by Huntington,[14] in speaking of the peritoneal relations of an appendix which lies in the connective tissue behind the cecum, he says, "Even in these cases, however, the dorsal surface of the cecum and the root of the appendix retain their free serous investment." By reference to Fig. 517, described in this connection, it seems apparent that the remark applies to an appendix in which the root lies against the cecum, and "the root of the appendix" has a "free serous investment" as does the "dorsal surface of the cecum"; in other words, that the outer or free side only of the appendix is covered by peritoneum, the same layer covering the dorsal surface of the cecum.

This brings the description under the third variety mentioned above, from which reference was made to Huntington. At all events it must be observed that the text is not altogether clear, that the reference is not specific, and that no allusion is made to a free mesoappendix with an unadherent distal margin. Treves[13] mentions a case in which the appendiceal tip was adherent to the under or left layer of the mesentery of the ileum, forming a loop, but no reference is made to an extraperitoneal relation of any portion of the appendix.

It is instructive in this connection to consider certain embryological facts which may shed some light on this very unusual location of the appendix. Excellent figures illustrating these points may be found in the text of Huntington[15] or Kollman.[16] About the sixth week of the embryo the cecum develops as a bud on the posterior surface of the ascending limb of the umbilical loop. The twist toward the right of the posterior limb of this loop around the duodenocolic isthmus places the cecum in the right hypochondrium below the liver. This occurs about the fourth month, and the appendix at this time is already differentiated from the cecum by the overshadowing growth of the body of the latter. During the next three months, with but rare exceptions, the cecum gradually descends to the right iliac fossa, reaching this location about the seventh or eighth month. During this descent of the cecum with the formation of the ascending colon, the identity of the appendix is rapidly developed; a mesoappendix is doubtless present at a very early stage of this development.

In most instances as the cecum descends, the mesentery of this portion of the gut becomes adherent to the dorsal parietal peritoneum of the abdominal cavity, and identical with it, the coalescence progressing from the median line outward toward the ascending colon, and also from above downward. The peritoneal covering of the posterior part of the colon also unites with the dorsal parietal peritoneum, with which it comes in immediate contact, the two adherent layers eventually giving place to the retrocolic connective tissue. The failure of this peritoneal coalescence results in the unusual occurrence of a cecum and ascending colon, completely invested with peritoneum to a varying degree from below upward, with the presence of a longer or shorter mesentery from without inward toward the median line, according to the degreee to which the coalescence has been deficient.

The retrocecal relations of the appendix appear to bear a relation to these embryological changes. While the explanations offered for the development of these relations are of necessity largely hypothetical, still it can be said of them that they appear to be logical and sufficient. As the cecum descends, it seems that the tip of the appendix occasionally becomes adherent to the posterior abdominal wall in the line of this descent. The peritoneal relations of the appendix produced in this way would vary according as the appendiceal tip became adherent high up or low down in the cecal course. Occurring high up, the cecal descent would carry the base down, eventually rendering the appendix taut. Still further descent would cause the cecum to overhang the base of the appendix to a varying degree, so that the appendix would appear to spring from the posterior cecal wall; this condition is also accentuated by the subsequent right lateral develop-

ment of the cecum inferiorly. The descent progressing still further would eventually place the base of the appendix so far up on the posterior cecal wall that the coalescence of the cecal and parietal peritoneum with the formation of the retrocecal connective tissue would naturally reach below the base of the appendix, forming the cecoparietal peritoneal fold at this point, and thus leaving the appendix lying completely in the retrocecal connective tissue and entirely out of relation with the peritoneum. This is the condition met with in the fourth variety mentioned above.

Having these changes in mind, it is readily conceivable how some of the other relations of the appendix previously described may occur. The appendix becoming adherent lower down, or the descent of the cecum being less marked, only the distal portion of the appendix may come to lie in the retrocecal connective tissue, while the remaining proximal portion, merely being drawn snugly against the lower part of the cecum, still lies in relation to the peritoneum. The peritoneal surface of this proximal portion now lying in contact with the peritoneum of the posterior cecal wall coalesces with the latter and changes to connective tissue precisely as in the case of the cecum and parietal peritoneum, so that eventually the proximal portion is covered by peritoneum on only one side, while the distal portion lies above the cecoparietal fold in the retrocecal connective tissue. The mesoappendix also becomes adherent to the cecum, and it is sometimes thought to be traced as a thickened peritoneal surface on the cecum to the inner side of the adherent proximal portion of the appendix. In this way is explained the third form previously mentioned.

For an explanation of the case under special consideration we must naturally turn to changes produced in this same line of development, since it bears such a close and suggestive relation to the third form, the development of which we have just considered. It seems most probable that in the case reported the tip of the appendix became adherent rather late in the descent of the cecum, so that only a small portion, 1 cm., became lodged in the retrocecal connective tissue. It would seem that this condition eventuated when the cecum had nearly reached its lowest position and the appendix, instead of being drawn taut against the cecum, still had a considerable proximal portion free in the peritoneal cavity with a mesoappendix extending 2.5 cm. outward from its base. The portion of the appendix between the retrocecal tip and the mesenteric portion, a distance of 1 cm., became adherent in some way to the cecum, the adherent peritoneal surface changing to connective tissue.

That this process of adhesion of the appendix to the cecum should have stopped exactly at the point where the mesoappendix ceased, leaving the distal edge of the mesoappendix entirely free and the proximal 2.5 cm. of the appendix in the usual relation to its mesentery, is strange and very unusual, but entirely conceivable in the order of development. Had the distal edge of the mesoappendix become adherent, a fossa would have been formed extending under the free portion of the appendix and the remainder of the mesoappendix. This fossa might later have been entirely obliterated by adhesion of the mesoappendix to the cecum, the free portion of the appendix also becoming adherent, and thus produced a condition quite similar to that described under the development of the third form, though brought about in a different way.

Aside from its anatomical interest, this very unusual relation of the appendix possesses two elements of clinical interest. The unavoidable presence of a bend or kink in the appendix at the termination of its mesenteric portion has, of course, the same significance as a similar condition existing under other circumstances, the importance of which has been so admirably insisted upon by Allen.[17] The other clinical feature is the possibility of an intestinal obstruction owing to the insinuation of a nuckle of small gut under the free mesenteric portion of the appendix, beneath the mesoappendix, and out below its unadherent distal margin; such a possibility was noted by Treves[13] in the case showing a free appendiceal loop, to which reference has been made.

Although adding nothing to the present discussion, a contribution by Peronidi[18] gives an extensive bibliography on the anatomy of the cecum and appendix, containing many articles to which reference would otherwise have been made in the paper.

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The Production of Prussic Acid from Albumins.—That prussic acid might possibly be formed in certain metabolic anomalies of the body would be the natural deduction. From the researches of B. H. A. PLIMMER (*Jour. of Physiol.*, May 3, 1904). By causing the oxidation of albuminous substances with Neumann's acid mixture (equal parts of strong nitric and sulphuric acids), the author succeeded in obtaining hydrocyanic acid, the amount being constant, and varying according to the form of albumin used. This substance may also be obtained by the oxidation of the products of hydrolysis of albumin.

A MODIFIED SCISSORS.

BY CHARLES C. MILLER, M.D.,
AND
J. H. LANGSTAFF, M.D.,
OF CHICAGO.

Scissors occupy a most important place among the instruments of the modern surgeon. They have been variously modified by operators to meet the peculiar requirements of surgical technic. In certain respects, we have found the scissors in common use inconvenient, and to overcome some of these inconveniences, we have adopted a modified instrument, as can be observed in the accompanying illustrations. This instrument cannot supersede the ordinary scissors for general purposes, but will prove to be useful for certain steps in the technic of not a few operations.

The instrument with the longer blades will be found invaluable in some cases in following a grooved director, and with this in view the blades should be so made as to permit this most readily. If the blade is not too wide, it can be slipped along the groove until its full length is beneath the tissues to be divided. In this way, tissues can be separated with these scissors much more rapidly, than where the ordinary pointed scissors are used. With the pointed scissors, the point alone can be

Fig. 1.

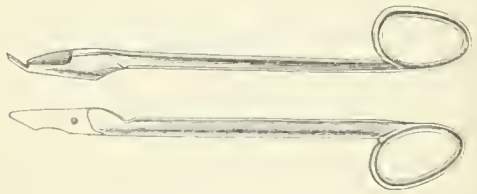

Fig. 1 illustrates the blades of the instrument separately; showing the outline of the blades.

pushed beneath the tissues to be divided, and the tissues are cut by many short snips, which is time consuming, and has the further disadvantage of making an irregular ragged cut.

Where properly made, these scissors will prove very useful in certain situations, because they permit the operator to lift up portions of tissue, before they are divided. In opening the anterior or posterior uterine cul-de-sac through the vagina, where the ordinary scissors are used, as soon as the vaginal mucosa is divided, the parts are often obscured by oozing blood. In working upward, one must either blindly snip the tissues with the ordinary scissors, or lose considerable time in having the field frequently sponged. In some cases it is very easy to enter either cul-de-sac, but in others it is not, and the procedure, is more or less blind, because of the limited space and oozing blood. While I cannot recommend the practice, many operators will open the peritoneum through the vagina, trusting to their sense of touch, to enable them to keep close to the uterine wall. This sense of touch through a long pair of scissors is uncertain, and the operator may think that he is closely following the uterine wall by the impression transmitted to his scissors, when in reality he is not. With these scissors tissues can be picked up by the small blade, and when firmly hooked beneath them, can be drawn outward, and thus are exposed to sight before they are divided. In this way no attention need be given to clearing the field of blood.

The instrument will also prove of value in doing the complete hysterectomy from above, when working our way into the vagina. The small short blade can be used to hook up a considerable

Fig. 2.

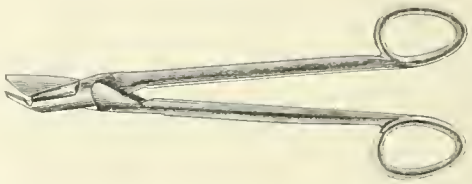

Fig. 2 illustrates the short blade which is particularly useful for removing sutures and for use in positions where space is limited.

mass of tissue, which can be quickly and certainly divided, the position of the blades making slipping less liable than in the ordinary scissors. In this operation, where time can be saved with safety by a special instrument, it is well worth while to have one at hand.

Firm strong adhesions of the viscera, can often be more safely clipped with these scissors than they can be by those ordinarily in use. Very often one will use this instrument to divide adhesions rather than to separate them with the fingers. Where an intestinal loop is firmly adherent to a solid tumor, or to the uterus, the small blade of the scissors can be pressed under the adhesion close against the uterus or tumor, and it can be more safely divided than by separation with the fingers.

In some operations, we are anxious to avoid the division of certain nerves. In cutting with the ordinary scissors or the scalpel, we must watch

Fig. 3.

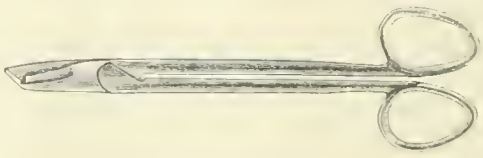

Fig. 3 will clearly illustrate the position of the blades when the instrument is closed.

very closely, lose a good deal of time sponging away slight amounts of blood, which obscure the field, and in spite of care in a certain percentage of cases, we may accidently injure the nerve. In such an operation, the tissues can be picked up rapidly by these scissors and put upon the stretch before they are divided. In this way our cellular tissue is rendered bloodless, when stretched tightly over the blade of the instrument, and the nerve

for which we are searching at once becomes visible.

These scissors were originally devised by Dr. Langstaff for the removal of sutures. In some localities considerable difficulty is experienced in picking up a silver wire or silkworm-gut suture with the ordinary scissors. In repairing the lacerated cervix, the wire or the silkworm-gut suture is superior to all others, but in some patients, particularly after repair of the perineum, it is difficult to remove them after the operation. These scissors facilitate the removal of such sutures. The small blade can be passed well under the stitch before an effort is made to divide it.

The success of perineorrhaphy often depends upon proper suturing and suture material. Catgut will always prove more or less unreliable when placed under tension. Vaginal sutures of gut to unite the perineal body are, in my mind at least, much inferior to the silkworm-gut, and I prefer the latter to the former. Where used, they should not be cut short. The long extremities of the sutures should be gathered in a bundle, and left lying in the vagina. When they have served

Fig. 4.

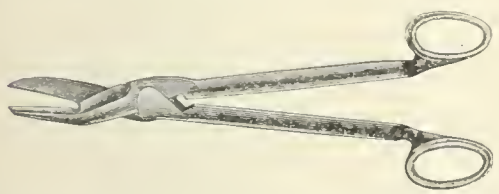

Fig. 4 is the instrument with the blade double the length of those illustrated in the former three cuts. This instrument is as a rule most useful for operative work. It may appear of doubtful advantage to burden one's instrument table with these special scissors, but their trial will, we believe, demonstrate their advantages.

their purpose, the scissors illustrated in this article will prove useful in reaching and removing them.

These scissors are of particular value in removing silver-wire sutures used in wiring the jaw, when this bone has been fractured. We always try to secure as small a scar as possible, after operations on the face. In jaw fractures, it is best to remove the silver wire, when the bone has united. The wire can be untwisted, but that will leave a spiral end, which can only be pulled through the bone with great difficulty. Without untwisting, the small blade of the scissors can be passed well under the loop, and the tissues pressed out of the way so that the wire can be cut with ease. One cannot appreciate the value of these scissors for this purpose until he has tried to cut the wire with ordinary scissors, or has attempted to draw a heavy wire through the bone, when it is more or less spirally bent, as the result of untwisting.

The instrument is more or less useful in cutting stitches in other parts, as the small blade can be slipped under the loop, and the instrument turned so that it is impossible to nip the patient accidently.

MEDICAL PROGRESS.

MEDICINE.

Lipase in the Urine.—The diagnosis of pancreatic disease, especially of the acute pancreatic form, is attended clinically with such difficulties that any accessory symptoms are welcome additions. It has long been known that in certain cases of pancreatic disease lipase, a fat-splitting ferment, appears in the urine, but the fact has hitherto not found any practical application. The test for its presence suggested by Ophüls (*Jour. Med. Research*, May, 1904) is simple enough to warrant its acceptance as a valuable practical adjuvant in diagnosis. Five c.c. of urine in two flasks are accurately neutralized with sodium hydrate solution of one-tenth normal strength; one of them is then boiled in order to destroy the lipase, and is used as a control. To each tube is now added one-fourth c.c. of ethyl butyrate, and one-tenth c.c. of toluene to prevent the development of bacteria. The flasks are incubated at 39° C. for twenty hours. The contents of each flask are now extracted with ether. If there has been considerable activity on the part of the lipase, there is a marked odor of butyric acid in the unboiled specimen. Quantitatively the acidity may be measused by titration. The lipase is probably identical with that which causes fat necrosis in the abdominal cavity.

Chronic Diphtheria.—Although the existence of this condition has been recognized for many years, there are but very few references to it in the literature. L. Neufeld (*Deutsche med. Woch.*, May 12, 1904) believes that the affection is not so rare as ordinarily supposed, but that the obscure situation of these pharyngeal ulcers renders them hard to find, or if found they are often considered as tuberculous or specific lesions. He reports a case where an ulceration of the pharynx followed an apparently simple angina. It was finally proved to be diphtheritic in character and took five months to heal. A specific diphtheritic process with the formation of a false membrane was not observed during the angina or later. Fever was only noticed during the acute stage of the angina, which lasted but two days. Behring has called attention to a group of clinical cases which he terms diphtheroids; these differ from true diphtheria in the clinical picture which they represent, but are nevertheless due to infection with the diphtheria bacillus. Neufeld thinks that his case may also be included in this group and that there are many instances where an aborted diphtheritic infection is the basis of one of these chronic processes. He also found that in many cases of atrophic rhinitis, plate cultures showed the presence, among the ozena bacillus, of several colonies of bacilli belonging to the diphtheria group. His observations are not sufficiently assuring, however, to warrant him in drawing any conclusions.

Reaction After the Use of the X-Rays.—It is claimed by H. E. Schmidt (*Deutsche med. Woch.*, May 12, 1904) that there are premonitory signs which he terms "Frühreaktionen," which come on within a few hours after an effective application of the X-rays. These are not uncommon and are erythematous in character. They must be distinguished from the dermatitis usually associated with X-rays and which is not apparent until eight to fourteen days after their application. This erythema is independent of the age of the tubes and has only been observed in isolated cases, where a particular predisposition seems to be present and where recurrence is almost

invariable. The phenomenon apparently depends on some peculiar sensibility of the circulatory system to the rays, similar to that which has been demonstrated for other influences of a psychic, toxic or thermic nature.

The Adaptation of the Pupil to the Habitual Use of Atropine.—A study in the very important field of biological adaptation has been made by W. Stefani (*Arch. Ital. de Biologie*, March 24, 1904). In studying the reaction of the pupil to the prolonged use of atropine the author noticed at first an acceleration in the appearance of the reflex and a shortening of its duration. As a second stage there is noticed a retardation in the appearance, with a diminution of intensity and duration. The first stage recalls the mode of reaction in young individuals. The adaptation is apparently connected with a more rapid circulation of the drug in the tissue elements. The quality of reaction is not changed by adaptation, which only changes the intensity of the reaction. At the end of a certain time the reaction diminishes and continues to diminish progressively until a certain point, after which it is constant. The results, according to the author, might have a general application, if they be confirmed by analogous researches on other stimuli. The various theories of immunity (phagocytic, antitoxic and humoral) must all ultimately be reduced to the adaptive capacity of the individual cell, just as the results of the author bespeak an adaptation of the cellular elements of the pupil. Other facts in biology are brought to mind. Thus, the more rapid appearance of the reaction and the shortening of the duration, correspond to an increased excitability and resistance toward the action of the drug. The repeated application of the stimulus exaggerates excitability and resistance, determines predisposition and confers immunity, refines sensibility and produces indifference. One might apply here the figure suggested by Fisher, and compare the sensitive elements to a lock and atropine to the key, adaptation being but the facilitation of the play of these elements without altering the type or the correspondence.

Medical Aspects of Decapsulation of the Kidneys for Chronic Bright's.—Only after a careful analysis and classification of the cases reported as instances of chronic Bright's disease subjected to decapsulation can we form a proper estimate of the value of this operation, in dealing with these unfortunate patients. Surgeons seem to have persuaded themselves that the disease is an unmanageable one by medical treatment, and that decapsulation is the one avenue of escape. A. R. Elliott (*N. Y. Med. Jour.*, June 4, 1904) has endeavored to classify the cases which were recently reported by Guiteras as the most complete list of operated cases in this country. It was possible by the clinical data given to fairly definitely classify 112 out of the 130 cases enumerated. Of these 29 were instances of floating kidney with albuminuria; 43 were cases of chronic interstitial nephritis, and 33 chronic parenchymatous nephritis. Of these 76 cases 36 died; 12 were unimproved; 2 rendered worse and 26 were improved. Thus 65.80 per cent. of cases failed to be improved by the operation, and of those said to be improved many of them had not passed the probationary period of six months. Certainly these statistics could not be considered as comparing favorably with the results of medical treatment upon similar cases. It is well to remember that chronic Bright's in its development constitutes a diseased condition of the entire system. It is of very gradual development and in the great majority of cases has existed for years before it is discovered. Anuria, general dropsy and even uremia in kidney disease are in many instances the result of cardiac failure, and the treatment often centers around that organ, which certainly could not be helped by this operation. Experiments demonstrate that within a period of three months and a half a new and, in most cases, a tougher fibrous capsule has taken the place of the original one. At the present time, therefore, one does not seem justified in advising an operation, the results of which are far more uncertain than those of medical treatment.

Treatment of Epidemic Cerebrospinal Meningitis by Intraspinal Antiseptic Injections.—Since the death rate from this disease during the present epidemic has ranged from 80 to 90 per cent. various methods have been resorted to in the hopes of better results. C. E. Nammack (*Med. Rec.*, June 4, 1904) reports five cases in which a ten per cent. lysol solution was injected into the spinal cord by lumbar puncture. In one case, after three injections of 15 cm. each at intervals varying from one to three days, the patient entirely recovered. The other four cases died, some of them showing temporary improvement after an injection.

Pancreas-hemoglobin Muscle Extracts in Diabetes.—Although the pancreas is known to be intimately connected in many cases, at least, with the causation of glycosuria, yet it is not at all well understood just what relation the functions of the gland has to the metabolism of sugar. It is supposed by many that an internal secretion from the pancreas converts the glucose into an assimilable carbohydrate and that when this function of the gland is lost glucose is rapidly excreted by the kidneys. A. C. Croftan (*N. Y. Med. Jour.*, May 7, 1904) by experimentation has found that by giving the pancreas gland alone to animals or human beings suffering from glycosuria, no appreciable diminution in the amount of sugar excretion is found. If, however, pancreas is placed in a sugar solution that contains hemoglobin there is a decided action in which glucose undergoes conversion. He has, furthermore, proven that by using an extract of pancreas-hemoglobin-muscle he is able to control the sugar excretion of diabetics to a considerable extent, and thus allow the patient a moderate carbohydrate diet from which he may derive the necessary nutritial qualities instead of passing the glucose off through the urine unchanged.

Increase of Pneumonia.—One of the most distressing admissions which the medical fraternity is obliged to make is its seeming inability to successfully cope with that king of diseases, pneumonia. J. H. Pleasants (*Maryland Med. Jour.*, May, 1904) shows that in 1890 the deaths from pneumonia were considerably less than those from consumption, but that there has since been a gradual increase in the number of cases and the mortality until in 1900, when pneumonia claimed almost as many victims as consumption. Even though we have found no specific by which we may treat this much-dreaded disease, yet it is not reasonable to suppose that our methods are not as efficient as they were twenty or thirty years ago. Some of the factors which he mentions as being important in determining the death rate, and especially in making the mortality seem high at the present time are: Increased density of population, climatic changes, large influx of immigration, the more accurate diagnosis, a possible increased virulence of the pneumococcus and the introduction of the influenza bacillus during the past fifteen years. Many of these factors undoubtedly diminish the resistance of the lung tissue.

Obesity.—The mode of living which is pursued by many at the present time has naturally resulted in making obesity a condition which the physician is frequently called upon to remedy. L. Williams (*Practitioner*, May, 1904) gives some valuable suggestions in regard to

the management of these cases. Obesity in its commoner forms is, of course, due to a want of balance between intake and output, either too much food is ingested or too little oxidized, but it is often very difficult to discover the nature of the want of balance. Those who have been athletic in youth are very liable to continue the habit of eating large meals, long after the necessity for that amount has ceased. Another set of persons who habitually eat too much are those deluded creatures (generally women) who imagine that they need "supporting" and proceed to eat highly nutritious foods at frequent intervals of the day. An entire separation from their ordinary environment is generally needed. Drinking large quantities of water and especially alcoholic beverages at meal time is very conducive to obesity, for it not only seems to increase the appetite, but also enables the food to pass more rapidly out of the stomach and makes it possible for the patient to eat more. Fluids should be taken a quarter or half hour before eating or after all the solids have been eaten. The importance of thorough mastication is not usually fully recognized. It is said that every mouthful should be masticated until it is both fluid and tasteless and if this is done a patient will oftentimes be satisfied with one-half the ordinary amount. A severe restriction of the proximate principles which are most readily converted into adipose tissues, such as starches, fats, sugars and alcohol, is, of course, important, but if carried too far the kidneys may be injured. To effect oxidation muscular exercise is of greatest importance, but it is frequently impossible to secure the proper amount and kind of exercise without sending the patient to some resort. The reason why as much fat is deposited in the abdomen, he believes, to be due to the fact that the abdominal muscles are not sufficiently exercised and developed. Activity of the brain must also be maintained and all tendencies to lethargy fought. He lays especial stress upon the fact that most people are too much afraid of fresh air and dress altogether too warmly, thus seriously diminishing the function of that most important organ, the skin. He discourages the prevalent use of thyroid extract as being deleterious to the heart and other organs, and urges that it be exhibited carefully and only when associated with the other details of management and hygiene.

Tetanus Treated by Intravenous Injection of Antitoxin.—It has been known for some time that the tetanus toxin exerts its influence only upon the cells of the central nervous system, particularly those of the spinal cord. Furthermore, this toxin apparently can reach the central cells only by traveling centripetally along the axis cylinder processes of the motor nerves. J. Rogers, Jr. (*Med. Rec.*, May 21, 1904) suggests that since the poison pursues this course, a much more immediate and decided effect can be obtained from the antitoxin if it is injected directly into the nerve trunks along which the toxin is traveling. Of course, if it is injected early, the subcutaneous or intravenous methods are successful, because it requires several days before the virus is able to cause symptoms arising from its action upon the cells. If symptoms have already begun, however, and these are the cases usually met with, ordinary methods are seldom efficacious. Upon a seemingly severe case in the stage of trismus and opisthotonus he exposed the lower end of the brachial plexus and injected from five to ten minims of the antitoxin in each of the median, ulnar, musculo-spiral, musculo-cutaneous and circumflex nerves. He also did a lumbar puncture, partially withdrawing the needle several times to endeavor to scratch some of the nerves of the cauda equina and thus cause a more rapid absorption. He then injected 130 minims of the antitoxin. The patient was much improved within twelve hours and more antitoxin was injected into the nerves and the cord. He made a rapid and complete recovery without showing any reaction except a rise of temperature to 102° F. on the day following the first injection.

SURGERY.

Control of Colon Hemorrhage by Left-sided Colotomy.—The control of intestinal hemorrhage is a subject which is engrossing much attention at the present time. All effort in this direction by the use of drugs has been given up by every intelligent observer. There is nothing left except mechanical treatment by surgery. Henry B. Robinson (*Lancet*, April 23, 1904) recites the history of a case in a man, sixty-six years of age, who suffered almost continuous hemorrhage from an ulcerative colitis. By good fortune, operation revealed the hemorrhage taking origin in the lower portion of the sigmoid, which part of the bowel happily escaped through the laparotomy wound. The mesentery was perforated opposite the ulcer, a glass rod slipped beneath the gut and the wound packed. The patient died in thirty-six hours. Post mortem, a well-marked ulcerated colitis was found which began at the cecum and reached to the lower end of the sigmoid. The rectum was practically healthy. The hemorrhage was entirely controlled by operation, but the work was undertaken too late to prove life saving.

Renal Reflex Pain.—Probably no organs in the body produce more acute reflex pain than the kidneys and the ureter. As a rule, although it is widely distributed over the abdomen, there is more or less segregation of the symptoms on the affected side. David Newman (*Lancet*, April 23, 1904) states that although it varies according to circumstances, it is sufficiently constant to be a very valuable guide to the surgeon in determining the nature of the involvement. The renorenal reflex pain has been described by Guyon and Thornton. Morris states that it is important to know that a stone in one kidney will sometimes excite sympathetic pain in the other, but this pain is of an aching character, differing from the usual symptom in not being spasmodic or colicky. He states that in his experience there is not a single case in which pain had been of the renorenal reflex character. The author cites three cases, which are described in full, from which he concludes that those observers who believe in the existence of this symptom are correct. He believes that an entire absence of pain may exist on the involved side. Six cases in all are discussed in this interesting article and the conclusion is, that absence of pain on the side diseased is not unusual, and is of very great clinical importance.

Intracranial Resection of the Second Division of the Fifth.—The usual mode of reaching this nerve near its origin is by following it back from its exit on the face through the floor of the orbit as nearly into the sphenomaxillary fossa as the surgeon's skill may carry him. J. Hutchinson, Jr. (*Lancet*, April 16, 1904) recommends that this disfiguring procedure should be supplanted by an intracranial operation: (1) because it is possible by this path to get nearer to the brain and make more certain the prospect of permanent cure; (2) because a depressed scar on the cheek is much more disfiguring than one hidden by the hair of the scalp. A year ago the author operated upon a ship's officer, nearly sixty years of age, who was suffering from the most intense form of facial neuralgia. As in the operation for the removal of the Gasserian ganglion, the dura and the temporosphenoidal lobe were pushed upward and inward. From this point on, however, the foramen ro-

tundum is the landmark sought rather than the foramen ovale, as in the Gasserian ganglion operation. The whole of the nerve was removed and a small drain inserted. The relief during the last twelve months has been permanent. Anesthesia is naturally well marked over the cheek, the soft palate and the lower eyelids. The patient can eat and talk with comfort, whereas before the operation both acts brought on spasmodic pain. In those cases of facial neuralgia in which the third division of the fifth is involved, this operation must ultimately become that of choice if for no other reason than because there is no interference with the muscles of mastication. The depth of the nerve trunk is 3 cm. from the temporal fossa, and the oozing in the narrow space obtainable by a pushing back of the brain is just as troublesome as in the case of Gasserian ganglion removal. In Treve's five cases pain is recurred within twelve months in two. The third patient died within six months, and in the remaining cases recurrence was observed within two and three years, respectively. Out of 22 cases of Carnochan's operation in but three was the relief stated to be permanent. This is a discouragingly low percentage of cure and bears no relation whatsoever to the results obtained in properly executed Gasserian ganglion operations.

Congenital Absence of the Patella.— The comparatively few cases of this rare condition which have been reported may be divided into two groups: (1) Includes those where there is a congenital absence of the patella, combined with other deformities of the knee-joint. This also includes those instances where during the first few years of life the patella is absent or only partially developed, but may grow more or less during later years. (2) Cases where there is a congenital and hereditary lack of both patellæ, but where the joint is otherwise perfectly normal. In the latter group is included the case reported by O. Heine (*Berl. klin. Woch.*, May 9, 1904). The patient was a man of thirty-four years, who stated that his father and sister were similarly afflicted. X-ray examination showed the complete absence of both patellæ. The condition did not appear to interfere in any way with his activities. The outer condyles and the tuberosities were markedly developed. When the man forcibly extended or flexed his knee, the quadriceps tendon slipped outward and apparently was supported by the enlarged condyle, the latter acting as a fulcrum, and in this way aiding the action of the muscle. The hypertrophied tuberosity of the tibia also seemed to take the place of the patella, by displacing the tendon further forward. From a study of the case thus far reported, it appears that the deformity is hereditary, that the knee is otherwise normal, that its function is undisturbed, and that the tuberosity of the tibia acts as an efficient substitute to the patella in the functionating of the joint.

Suprapubic Prostatectomy Under Nitrous Oxide.— The chief contraindication to the performance of prostatectomy, in many cases, has been the danger resulting from the administration of ether or chloroform. J. Wiener (*Jour. Am. Med. Ass'n*, May 14, 1904) suggests the use of nitrous oxide and reports a number of cases which he believes were the first to be done in this way. All his cases were in poor general condition and it was therefore necessary to shorten the time of operation and to avoid shock and hemorrhage. Seven patients were operated upon with good results: old age, diabetes and cystitis not proving contraindications. The operation usually took between ten and twelve minutes, some time being saved by cutting down on a distended bladder. The author believes that a previous cystoscopic examination is unnecessary and apt to do harm, often setting up an acute cystitis. He follows Lilienthal's method and employs continuous bladder drainage immediately after the operation. The gauze packing is removed at the end of twenty-four hours and a tube substituted, which remains in place usually two to three weeks. The bladder is irrigated twice daily. A sound should be passed three weeks after the operation once a week for three to four weeks longer. The only case where a perfect result was not secured was one in which this sounding was omitted and a prostatic stricture resulted.

The Prevention of Tetanus.—That it is possible to prevent tetanus if a punctured wound which has been inoculated with tetanus bacilli be treated sufficiently early by methods which are based on the knowledge of the bacteriology of the disease is the opinion advanced by D. E. Eisendrath (*Jour. Am. Med. Ass'n*, May 14, 1904). The wound is practically, in most cases, a closed one, filled with blood clots, necrotic débris and foreign bodies, and the essential thing in the treatment is to open and cleanse every part of it, preferably under general anesthesia. Prophylactic injections of tetanus antitoxin should be given to aid the organism in combating whatever toxins may have been absorbed prior to the time of operation. The blank cartridge itself does not contain the tetanus bacilli, but undoubtedly carries them from the skin while penetrating the latter. He believes that the only way to reduce the mortality is to employ the most radical procedures, with which he was successful in eight cases treated in this manner.

Antethoracic Esophagojejunostomy.—This operation is intended especially for multiple, benign stenoses of the intrathoracic segments of the esophagus, or possibly for carcinoma of the gullet in the region of the bronchus. As a substitute for the esophagus it is planned to carry a portion of the intestine out from the abdominal cavity over the bony throax and affix it to the chest. It is then proposed to expose the esophagus in the neck, to cut it through as far down as possible and also attach it to the anterior aspect of the chest wall. The intervening space between the gut and the esophagus may then be converted into a canal by means of a plastic flap. This unique procedure has been proposed by L. Wullstein (*Deut. med. Woch.*, May 12, 1904) and experiments on the dead body showed that the most suitable section of gut for the purpose was that part of the jejunum lying about 30 cm. below the plica duodenojejunalis. The jejunum may be carried up to the fourth costal cartilage without producing any great amount of tension. The flap for the plastic procedure is taken from in front of the sternum and over the right costal cartilages. It is turned so as to make a tube with the skin side within and may then be united with the gut below and the esophagus above. Animal experiments were conducted with considerable difficulty, the hair lining the tube and the trouble in nourishing the dogs interfering with the success of the procedure. Thus far no attempts have been made to apply the operation in the human subject. From his study of the method, as carried out on the cadaver, it is suggested that the operation be done in three stages, which he describes in detail. In the first, the jejunum is fixed to the anterior thoracic wall. In the second, the skin tube is formed from the plastic flap, and in the third the esophagus is isolated and united to the plastic tube. The first and second stages may be done together, but it is suggested that an interval of ten days be allowed to elapse before the third stage is completed. The same principle is also suggested for another operation which he calls retropelvic colorectostomy. In this the rectum is brought into direct communication with the descend-

ing colon outside of the pelvis in the region of the left iliac bone.

A Case of Sinus Pericranii.—Stromeyer first described this condition as a tumor under the pericranium which contains venous blood, and is in communication with the cerebral sinuses, either directly or through the medium of the venous blood, channels in the bony cranium. The lesion is a rare one and the case reported by M. LITTAUER (*Berl. klin. Woch.*, May 30, 1904) is only the tenth on record. The patient, a man of twenty-four years, received a blow on the head, which was not followed, apparently, by any serious consequences. Some two weeks later, however, after being for some time in a stooping position, the man noticed a soft swelling in the right temporal region which disappeared gradually after the erect position had been resumed. Whenever the head was bent down for any considerable period, the swelling reappeared. There were no attendant symptoms. The contents of the tumor were not cerebrospinal fluid as the presence of a hernia cerebri or a meningocele could be excluded. Blood which remained in communication with the general circulation was the only other material possible. The author believes that the injury caused a rupture of one of the veins of the diploë or of one of the emissary veins, and that the proper closure of the vessels was prevented by the dense adhesions of these structures to the surrounding tissues.

Treatment of a Third Ureter.—An interesting case is reported by HOHMEIER (*Zeitschr. f. Geb. u. Gyn.*, Vol. 51, No. 3), where there was present in a fifteen-year-old girl a third ureter, opening directly into the vagina. Earlier in life the complete hymen caused a retention of urine in the vagina from which resulted the formation of a large phosphatic calculus. This was removed, but the incontinence still continued. Operation was then decided on and the ureter implanted into the bladder through a deep perineal incision. The patient made an uneventful recovery. The absence of any scars in the perineum from obstetrical or operative sources rendered the vaginal operation very easy to perform.

Rubber Tissue and Boracic Acid in Chronic Ulcers.—Numerous methods have been suggested by which slowly healing chronic ulcerations, especially those varicose ulcers of the leg, might be more rapidly covered by healthy epithelium. W. S. SCALEY (*Med. Rec.*, June 4, 1904) reports a method which has been used with good results at the St. Luke's Hospital Dispensary. After thoroughly cleaning the surface of the ulcer it is covered by a generous quantity of boracic acid powder and then a piece of rubber tissue, large enough to extend an inch or more beyond the edges of the ulcer, is applied. This is held in place by adhesive plaster, a layer of gauze is added and the whole is firmly bound by a bandage. This dressing is allowed to remain in place from five to seven days. The advantages of this dressing are that the boracic acid acts as an antiseptic and astringent, diminishes the discharge and prevents exuberant granulations. The rubber tissue, being much smoother than gauze, prevents the roughening of the surface of the wound which is oftentimes seen to be furrowed by the latter. The rubber tissue prevents the absorption of the boracic acid by the dressing and it is also valuable for the same reason when ointments are used. The dressing may and should be left on for several days, because the tender epithelial cells are thus given a better chance to withstand manipulation. Great care should always be taken to avoid injuring the new cells.

Renal Redecapsulations.—Another step forward has been taken in the seemingly mad endeavor of surgeons to rescue unfortunate nephritics from the helpless hands of the physician. Much clinical material has now been brought forward to demonstrate the benefits to be derived from renal decapsulation and yet a careful perusal of this evidence must leave doubts in the minds of the less enthusiastic in regard to the permanent improvements. It is now admitted that decapsulation results in only temporarily removing the covering, for in a few weeks the organ is again surrounded by a capsule similar to the former one in structure and consistency. G. M. EDEBOHLS (*Med. Rec.*, May 21, 1904) reports the case of a man well till 1897 when symptoms of weakness were noticed, brick-dust sediment was found in his urine and he had one severe attack of headache and vomiting. Later urine examinations showed albumin and casts on various occasions, and in 1898 he had marked edema of feet for three months. He was subject to migraine, but apart from this and the symptoms mentioned above there were few or no symptoms of poor health during the subsequent four or five years. His urine then showed that there was some albumin and casts, and cultures from it showed the presence of *Staphylococcus albus* and the *Bacterium coli commune*. Renal decapsulation was advised and done in both kidneys. The capsule was found "slightly and unevenly thickened, but otherwise normal." He remained well for about six months after operation, when he had a severe attack of an acute infective, involving the urethra, bladder epididymis and prostate. This finally cleared up, but his anemia persisted and later uremic symptoms appeared. Renal redecapsulation was advised, but was refused until he became moribund and complete suppression of urine determined. The second operation in the hope that the latter condition might be relieved. "The new capsule was thinner and perhaps more transparent than the original capsule. There was not the slightest evidence of compression. The perirenal fat was found well vascularized, though the entire operation, including the separation of the capsule from the kidney was practically bloodless." The kidneys presented the same appearances as at the former operation. The patient died five hours later in uremic coma, but had voided considerable quantities of urine after the operation. The previous operation seems neither to have increased the vascularity of the kidney, nor to have relieved any compression.

PHYSIOLOGY.

Fermentation Experiments with the Muscle of a Mummy.—It has been shown that a positive precipitin reaction could be obtained with muscle substance taken from mummies dating back 250 to 2,000 years before Christ. E. SEHRT (*Berl. klin. Woch.*, May 9, 1904) thought it probable that in a similar manner a glycolytic action might be demonstrated. He obtained some pieces of the neck muscles from a mummy, powdered it and freed it from bacteria by aceton. The pancreatic element obtained was that of an ox, as it was impossible to secure that organ in a mummy. The experiments showed that this muscle has a marked glycolytic action, when combined with the pancreas, which is as effective as that seen with fresh muscle. The fact that a muscle, over 2,000 years old, has the power to produce reactions in a test tube, which only a comparatively short time ago were considered "vital," is not only of general scientific interest, but also serves to aid in changing present conceptions as to the nature of ferments.

Heat Regulation in Fever.—The respiratory-calorimetric investigations made on feverish children by E. BABÁK (*Pflüger's Archiv*, April 9, 1904) show that the regulatory mechanism governing temperature is subject to important disturbances in fever. The disturbance

affects the physical side of temperature regulation, namely, that which has to do with the loss of heat, more than it affects the chemical side, or that which has to do with the production of heat. Indeed, the latter may be normal. The former is detected by an abnormally diminished loss of heat. With a normal or even diminished production of heat, the temperature rises. On the other hand, there are cases in which the loss of heat is increased to a large extent and yet is not sufficient to carry off the excess of heat resulting from an accelerated production of heat. This last is proved by combined calorimetric and respiratory exchange methods. The important disturbance in the temperature-regulating mechanism in children suffering from fever is also frequently manifested in the rapid variations in the heat curve as well as the equally frequent and rapid alternations of the febrile and afebrile conditions.

Experiments on Surviving Mammalian Small Intestine.—After the removal of the mucous membrane, the spontaneous movements of the intestinal musculature continue, and are, therefore, not to be attributed to sensory stimulation of the mucous membrane, but are to be considered automatic, according to R. MAGNUS (*Pflüger's Archiv*, April 9, 1904). Likewise the removal of the submucosa and the therein contained Meissner's plexus does not affect these movements. The local peristaltic reflexes are possible also in the absence of Meissner's plexus. A simple tear at the inner border of the circular muscle does not interfere with the spontaneous movements of the circular muscle, but a similar tear at the outer edge of the latter, by virtue of which the muscle is isolated from Auerbach's plexus, causes a permanent disappearance of spontaneous movements, while the longitudinal muscle, which still remains in connection with Auerbach's plexus, preserves the normal type and rhythm of its movements. The above results show that the automatic movements of the intestinal muscle are not of myogenic origin, but depend upon centers contained in Auerbach's plexus. Possibly these results will be of value in the study of the rhythmic movements of the heart.

Blood-Platelets and Coagulation.—Many new and interesting facts of possible practical value in clinical medicine are revealed by the researches of K. BÜRKER (*Pflüger's Archiv*, March 21, 1904). A new method of obtaining the blood-platelets was devised as follows: A block of paraffin, whose upper surface has been scrupulously cleaned and smoothened, is placed in a moist chamber. A drop of blood is obtained from the tip of the finger from a wound made by the blade of a Franke's snapper, which has previously been cleaned in ether-alcohol aa, and then sterilized in the flame. The drop of blood is allowed to fall upon the smooth surface of the paraffin-plate in the moist chamber and allowed to remain in the latter for twenty to thirty minutes. The blood does not coagulate, provided that drying or contact with foreign bodies does not take place. The formed elements of the blood begin to separate, the heavy red and white corpuscles falling to the bottom of the drop, and the blood-platelets, being light, rise to the top. At the end of twenty to thirty minutes the top of the drop is touched with the surface of a cover-glass, which is then placed on a slide. Under the microscope are now found many blood-platelets and no red or colorless corpuscles. The author found that the blood-platelets are independent elements, and are not formed from red or colorless corpuscles. The author devised a new method for the determination of the coagulation-time of the blood, by which only a drop of blood is used, and in which the error never amounts to more than half a minute. The temperature influences coagulation-time. Thus at 13.7° C. the time is 18½ minutes; at 24.2° C. it is 6½ minutes; at 39.8° C. it is 2¾ minutes. A regular curve indicating the effect of temperature may be constructed. The effect of the temperature is so great and precise that, knowing the coagulation-time the temperature may be calculated. Independent of the variations in coagulation-time, corresponding to the varying temperatures of the day, there is a physiological variation in the former as follows: the minimum is reached during the early afternoon hours. For different individuals coagulation-time is fairly constant. Coagulation is closely connected with the destruction of blood-platelets. The amount of fibrin formed depends upon the number of destroyed blood-platelets. Moreover, all these factors that affect coagulation, such as temperature, wall of blood-vessel and chemical substances, act in a corresponding way upon the blood-platelets. If the latter are destroyed, then coagulation occurs; otherwise not. Thus, an extract obtained from the leech is capable of inhibiting coagulation. This substance, which is an albumin or an albuminous derivative, likewise inhibits the destruction of the blood-platelets. Certain quantitative and gravimetric observations indicate that the blood-fibrin is derived from the blood-platelets.

Physiology of the Thyroid.—In looking over the literature upon the thyroid gland, K. KISHI (*Virchow's Archiv*, Vol. 176, No. 2) discovered that, despite an enormous amount of work upon the subject, many very important questions are still unsettled. Thus, there is considerable difference of opinion upon the effects of simple removal of the gland. In the author's experiment one-third of the dogs did not die; monkeys showed as only symptom cyanotic discoloration of the face, but cats generally did not survive. These peculiar results are best explained by the presence of parathyroid glands, which are really embryonal thyroid tissue, able to assume thyroid function only when a large portion of the thyroid is removed. Cats require much more thyroid than dogs, hence the parathyroid tissue is generally insufficient in amount to keep the animal alive. Under normal conditions the parathyroids probably have no functions. Urine analysis shows that metabolism is less active in thyroidectomized animal, since the soft parts of the body especially are destroyed more rapidly. Examination of the organs gave evidences of hyperemia when death set in soon after the operation and interstitial changes with a more chronic course. The effects upon the blood show themselves in a loss of hemoglobin and red cells and an increase of leucocytes. The function of the gland is probably to neutralize a substance which destroys the red cells and alters the vessel walls. If this toxin is present in large amounts, acute symptoms, such as twitchings and tetany, will follow, while with small amounts, the tissues are so altered that cachexia and disturbances in growth are the consequence. The amount of toxin does not depend on the species of animal, but upon the food; it is greatest with food rich in nuclear elements, and is thus a nucleusproteid. The lining cells of the typhoid form an iodized globulin which unites with the poisonous proteid, forming thyreotoxin, this in time is split up into two harmless principles, another nucleoproteid and an iodized globulin, which pass into the lymph and blood vessels.

Adrenalin and Liver Glycogen.—In acute adrenalin poisoning, if the animal does not die too rapidly, the amount of glycogen in the liver is diminished according to W. B. DRUMMOND and D. N. PATON (*Jour. of Physiol.*, May 3, 1904). In chronic adrenalin poisoning the glycogen is not necessarily altered. The diminution of this substance is probably the result of degenerative changes present in cells of the central zone.

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SUMMER LABORATORIES.

WITH the close of the academic year research work in the various laboratories of our medical centers of necessity comes almost to a standstill, and the question for the laboratory worker, how and where to spend the summer vacation, if not already settled, at once becomes an important problem. With many the European laboratories, which remain open during the greater portion of the summer, are the ultima Thule. Large numbers, however, whose means do not permit the costly European trip remain at home and read and plan their winter's work at some quiet place in the mountains or at the seashore. Still others throw all thoughts of work to the winds and forget the laboratory in the hot, dusty city by the blazing camp-fire along the mountain stream, or amid the delights of a yachting trip, etc.

But after all the rest is to a great extent enforced, and the enthusiastic student yearns for his work, and after a few weeks of rest considers himself in banishment during the remainder of his vacation. If only he could combine his recreation with work away from the usual seat of his activities he would gladly embrace the opportunity. In this respect our biological cousin is more fortunate. For him there is the marine laboratory with all its delightful associations. Here he can enjoy the cool ocean breezes, away from the humdrum of the winter's classroom, and still work, and work, indeed, under the most favorable conditions, in contact with students and masters from far and near, the best and most powerful impetus and inspiration for research.

Is it not possible for more medical investigators to join this circle? They could only profit thereby, and perchance the biologist might also gain by the association. Surely the Grenzgebiet between medicine and general biology is sufficiently wide that workers on both sides could well occupy the same ground together. There is the great field of comparative pathology, the tillage of which will unquestionably require the collaboration of the biologist and the pathologist.

We are only now entering upon an era, in which the rôle of the protozoa in human pathology is beginning to dawn upon us, and in which the progress has been and will be painfully slow, if the medical man unaided is obliged to find his way through the maze of developmental phases in the life history of an organism, which even to the trained specialist are often so bewildering. The great good which would result from such an association cannot be doubted and is well exemplified in our country by the classical work of Councilman and his medical coworkers on the one hand and Calkins on the other.

For such work there can be no better field than the seashore or inland lake with its abundant flora and fauna. Mollusks, crustacea, echinoderms, tunicates and fishes are commonly infected with parasitic sporozoa and thus represent most valuable material for studies in this direction. Our cancer investigations would possibly be more fruitful of results if our knowledge of these low forms of animal life were more extended, and if the student of pathology could have the protozoan specialist at his side to advise and guide his research.

We should not only include the human pathologist, however, in our circle at the marine laboratory, but the physiologist and physiological chemist as well. To a certain extent the latter have already entered the fold and after a fashion have taken precedence over the pathologists, but still their number is small.

A magnificent example of what a marine laboratory should be is seen in the famous station at Naples. In our country there is Beaufort, Cold Spring Harbor, and Woods Hole, with the laboratories of the United States Fish Commis-

sion, and the many botanical laboratories throughout the country offer certain advantages as well as the more strictly zoological stations. Woods Hole has been the Mecca of the American biological student, and now, with Cold Spring Harbor, since the Carnegie Institute has granted its aid, these may become what many have been dreaming of—summer laboratories for the study of the applied biological sciences.

IS CATHETER LIFE A THING OF THE PAST?

No more serious consideration is likely to be forced upon the conscientious general practitioner than the solution of the problem how to drain the male bladder when the natural opening is partly blocked.

An eminent authority has recently stated that the mortality of catheter life should be regarded as 100 per cent. This is an astounding assertion, particularly in view of the fact that many men have been catheterized for a long period without suffering any apparent discomfort. Nevertheless, text-books, which are based on observations made four or five years ago, give the average life under the catheter as five years. It is now stated by the authority above alluded to that the period is nearer three years than five.

It becomes then a question of very grave importance, what is to be done with men who are approaching a condition which, other help failing, can be relieved only by recourse to the catheter. Are they to be advised to pursue a course of treatment which is confessed by all to have a high percentage of fatality? They cannot be allowed to continue living with undrained bladders in constant danger of ascending ureteral infection and pyonephrosis.

At the recent meeting of the American Medical Association, Syms, Goodfellow and Young reported a series of over 150 cases of perineal prostatectomy in which the average mortality was but a fraction over three per cent.

This is absolutely revolutionary. It is based upon the statements of three surgeons whose standing is such that no possible exception can be taken to the figures. The general practitioner must therefore conclude that an entirely new light has dawned on the subject of treating prostatic hypertrophy. The text-books on the surgery, which so commonly ascribe a mortality of from 20 to 30 per cent. to the operation of enucleation of the prostate, are obviously as pernicious for the practitioner as they are dangerous to the public. Their teaching is as obsolete as the most egregious inaccuracies of the old masters, and should possess for the progressive practitioner simply an historic interest. There is, however, resident in every human being, a natural antipathy to the knife, and no half-hearted physician can possibly convince the patient, who is in the very early stages, at which time conviction is most earnestly to be desired, that he should undergo an operation for the relief of a condition for which, from time immemorial the catheter has been employed. The physician himself must be absolutely convinced of the desirability of surgical intervention, for without enthusiasm on his part the public will certainly continue to live the life of their grandfathers.

Do the facts actually justify the awakening of such enthusiasm?

In the *Annals of Surgery* for June, 1904, Francis S. Watson, of Harvard, presents an invaluable sketch of the history of the operations for prostatic hypertrophy from the earliest times to the present. It is impossible to condense a tithe of what this author has to say in a short editorial note. But an acquaintance with the monograph may be safely urged upon every one who has cases of prostatic hypertrophy under treatment.

That the subject-matter is presented in a scrupulously fair and judicial manner is evidenced by the standing of its distinguished author; and that he has made a most successful effort to be conservative, surely to the point of satisfying the most non-surgical reader, will be evidenced from the following excerpt from his conclusions:

"Radical operative treatment," he says, "has not as yet reached the status at which we are justified in saying that all cases of prostatic hypertrophy should be submitted to it as soon as the condition is clearly made out, and has begun to give rise to slight symptoms. But we are justified in saying that patients should be given the benefit of it at a much earlier stage of the malady than it has been customary to apply it, and that where it is applied by those skilled in its performance, as soon as the hypertrophy can be clearly detected by examination, and if at the same time it has already given rise to well-marked symptoms, and the patient's condition is not unfavorable to the performance of an operation of this magnitude, the mortality of the operations, were they applied at that time, would be a trifling one, and their risks not nearly so great as entailed by the use of the catheter, assuming the latter to have been employed instead and under the same conditions."

To those men who are not innately averse to being convinced, these facts, as admirable an array as could well be found in the wide domain of surgery, must be convincing.

Such men will ask, "If we agree to advise operation, what technic is to be used?" Watson says: "The total removal of the gland by the perineal method is the operation of choice." There seems every reason to believe that he is correct. Only recently Young, of Baltimore, did an immense amount of his characteristically able work in exploiting the Bottini operation, but after a wide experience with it he has discarded this technic for that of enucleation through the perineum.

One impressive factor in the modern treatment is the rapidity with which the patients recover from the operation. Syms considers it distinctly disadvantageous to keep them in bed longer than is absolutely necessary, and he actually reported a series of cases in which the men were up and walking about in from twelve to thirty-six hours after operation.

The general practitioner then can conscientiously say to his patients that the operation would confine them in bed for a much shorter period than the average capital operation. What can he say to him as regards the anesthetic? It is well known that many patients dread anesthesia much more than the actual operation or even the tedious period of convalescence.

Martin B. Tinker, of Cornell, states that by using the massive infiltration method of Matas in the neighborhood of the ischiatic tuberosity, a half per cent. solution of eucaine will produce absolute anesthesia of the two nerves supplying the entire perineal region and the prostate. He has successfully and on several occasions removed prostates in this manner, the patients complaining simply of the discomfort of their position upon the table.

Modern methods and specialization have placed this operation upon a basis which is clearly unappreciated by the general profession. This ought not to be. The condition is too common a one to be allowed to be in any sense neglected. If this operation, which in every text-book is regarded as a capital one, has in truth been relegated, as it seems to have been, to the domain of minor surgery, the sooner the general practitioner knows it the better. The many victims of cystitis who constantly reinfect themselves with septic catheters should hail with delight this easy escape from the tyranny of their prostates.

ECHOES AND NEWS.

NEW YORK.

Accidents in New York.—During the year 1903 there were reported in New York City 7,912 deaths and unaccountable disappearances. Augmented by the Slocum disaster the records of the present year are likely to surpass this number by many hundreds.

Shifts Sanitary Heads.—Health Commissioner Darlington, for the second time in as many weeks, has temporarily shifted four of the five sanitary superintendents. About two weeks ago he made a sweeping change in the assignments. Last Monday he announced the following transfers: Dr. Moore, from the Bronx to Queens; Dr. Shields, from Manhattan to the Bronx; Dr. Sprague, from Richmond to Manhattan, and Dr. Murray, from Queens to Richmond.

The Sick Children's Mission.—The Sick Children's Mission of the Children's Aid Society began its work this summer in the opening days of June. Visiting physicians have been assigned to districts covering Manhattan from the Battery to Harlem, druggists have agreed to fill all medical prescriptions at cost price, and in many special cases food for sick and convalescing children is furnished from the mission headquarters. The mission also employs a force of experienced visitors, most of whom are trained nurses, to investigate the circumstances of every family in which a sick child is being treated. These visitors are required to ascertain the cause of distress, why the family is unable to employ a private physician, suggest means of obtaining employment to those out of work, and especially to give the mothers instruction regarding the management of their children and the sanitary care of their homes. Families who by reason of sickness or temporary want of employment are unable to command the attendance of a private physician are invited to apply, either personally or by postal, at 287 East Broadway.

Physicians as Inspectors of Tenements.—The public schools having closed, the Health Department physicians have taken up the "summer corps" work, and fifty doctors are engaged in inspecting the tenement houses of the city. Dr. Darlington says:

"This year, with the experience gained from last year's work, we expect to do almost untold good in the tenements. Of course, ignorance on the part of mothers as to the proper care of children is an obstacle, but gradually we hope to overcome it to a great extent. For the benefit of those mothers who do not know the rules of health the doctors carry with them cards on which is printed good advice. These cards are to hang on the walls, thus placing before the mother at all times full directions for properly feeding children. Mothers are advised to abstain from drinking beer or tea in quantities if their children are not bottle-fed. If children are fed from the bottle they are advised they be dren are fed from the bottle the parents are advised to depots. In addition to their work in the tenements, members of the corps are required to inspect the milk venders' shops, to close up all places violating the health ordinances, and to empty into the streets milk that is above the proper temperature, 50° F. Besides, they distribute coupons good for bottled milk at any of the Straus depots and in the parks or on recreation piers, and give out tickets for children's admission to the seaside hospital of St. John's Guild and to the floating hospital. I believe that the work of the corps will reduce the mortality rate this year even more than it did last year, and that with increased experience and increased facilities from year to year mortality among infants will be merely nominal."

PHILADELPHIA.

Site for State Hospital.—The commission appointed by the last legislature to select a site for the State Hospital for the Feeble-Minded and Epileptics has chosen a tract of land in Chester County, near Spring City. The land borders the Schuylkill River.

Germantown Hospital.—The new pay-patient building will be ready for occupancy the latter part of July. Ground has been broken for a new laboratory to cost $2,500, the gift of Mrs. J. D. McIlhenny. Anna T. Jeanes has given to the hospital a large lot and house.

Society of Tropical Medicine Incorporated.—The American Society of Tropical Medicine has been incorporated in the Court of Common Pleas of Philadelphia. The society is to maintain permanent headquarters in this city, but its two hundred members will be from all parts of the United States. The officers are: President, Dr. Thomas H. Fenton; vice-president, Dr. J. J. Kinyoun; secretary, Dr. Joseph McFarland; assistant secretary, Dr. J. M. Swan; council, Drs. R. G. Curtin, Judson Daland, Allen J. Smith, and W. M. L. Coplin.

Smallpox Quarantine Raised.—For the first time in three years there was a time during the past week when no place was under smallpox quarantine, and the disease in question is practically eradicated. Vaccination has been the only efficacious means of checking the epidemic. During this summer a house-to-house canvass of the city is to be made with the object of vaccinating all those who have as yet failed to comply with the request of the authorities.

List of Notifiable Diseases Increased.—After many months' consideration of the subject, the Board of Health has decided to increase the list of notifiable diseases. The revised list will include cholera, yellow fever, malarial fever, typhoid fever, typhus fever, scarlet fever, smallpox and varioloid, chickenpox, diphtheria, diphtheritic croup, cerebrospinal meningitis, measles, rubella, whooping-cough, tuberculosis (in any of its forms), pneumonia, erysipelas, puerpural fever, plague, trachoma, leprosy, tetanus, hydrophobia, and anthrax. Veterinary surgeons are required to report cases of glanders, anthrax, tuberculosis, tetanus, and rabies. In the past it has been incumbent upon the medical profession to report all cases of smallpox, diphtheria, typhoid and scarlet fevers, but under the new regulation the list is increased manifold. The most notable addition is that of pneumonia.

CHICAGO.

Sisters' Hospital Assured.—Within a few months the Columbus Hospital at Lake View Avenue and Deming Place, under the management of the Missionary Sisters of the Sacred Heart, will be an assured fact, sufficient funds having been already received to insure the success of the venture. The hospital will be five stories in height, and will be equipped with 150 rooms and 20 nurses.

Appointment of Dr. Szwajkart.—Dr. Adam Szwajkart has been appointed by Governor Yates a member of the West Park Board, to represent the Sixteenth Ward. He is a graduate of the University of Kracow, and of the Medical Department of the University of Illinois.

Semi-annual Death Report.—For the first six months of the year, according to the weekly bulletin of the Chicago Department of Health, the total deaths, 14,131, were 1,070 fewer than during the corresponding period of 1903, and the death rate, 14.69 per 1,000, was 10.9 per cent. less. There were 379 fewer deaths under five years of age—a reduction of 10 per cent.; but this decrease was entirely among those of the milk-feeding period. Of these there were 1,014 deaths, as compared with 1,660 last year, a decrease of 646 deaths, or nearly 40 per cent. The quality of the milk supply and the rarity of contagious diseases account for this marked reduction. There was a 6.4 per cent. increase of the deaths among the aged, those over sixty years old. Only five of the important causes of death show increases, namely, apoplexy, 93; Bright's disease, 106; consumption, 113; cancer, 42; and violence, other than suicide, 58. The following show the decreases indicated: Acute intestinal, 27; bronchitis, 134; convulsions, 30; diphtheria, 89; heart disease, 14; influenza, 63; measles, 221; nervous diseases, 171; pneumonia, 50; scarlet fever, 111; smallpox, 39; suicide, 52; typhoid fever, 107; whooping-cough, 187.

Low June Mortality for Chicago.—It is announced by the *Chicago Board of Health Bulletin* that the mortality for June was low. Among other things, the *Bulletin* says: "Temperature conditions during the last two months have given Chicago the lowest June mortality record, not only in her own history, but among all the great cities of the world. May averaged 57°, about 1° warmer than the record of thirty-three years. June averaged 65°, about 2° cooler than the record. The warmer May and the cooler June were especially favorable to the health of the young, and it is the mortality among the young, those under five years of age, that constitutes the most important factor of the general death rate. There were 1,745 deaths at all ages reported during the month—an annual rate of 11.01 per 1,000 of the population, and 24 per cent. less than the average June rate of the previous decade, which was 14.52. Of this total there were 430 under five years of age, or less than one-fourth (24.6 per cent.). Ten years ago, 1894, there were 2,033 deaths at all ages in the month of June, of which number 959 were under five years of age—a proportion of nearly double (47.1 per cent.) that of June, 1904. Death-rates are diminishing, health is improving, and the duration of human life is increasing all over the world—but in no other large city in the same proportion as in Chicago. This fact is becoming so generally recognized that the incredulity of a decade ago is now well-nigh overcome; that incredulity which found expression in the dictum of the most eminent vital statistician of the period, commenting on the death-rate of Chicago in 1893, that "a death rate of less than 18 in the thousand in a city of a million population is a sanitary impossibility." The city of London has a population of nearly five million; its death rate last year was 15.6 in the thousand. Chicago's diminishing death rate is due largely, if not entirely, to the conservation of the health and lives of the young—those under five years of age."

GENERAL.

American Electro-Therapeutic Association.—The fourteenth annual meeting of the American Electro-Therapeutic Association will be held at the Inside Inn, St. Louis, Mo., September 13, 14, 15 and 16, 1904. The scientific sessions will be held only in the mornings, leaving the afternoons free in which to visit the attractions of the Fair.

Doctors to Meet in Denver.—The American Academy of Ophthalmology and Oto-Laryngology will hold its ninth annual meeting in Denver, Colo., August 24, 25 and 26, 1904. Dr. Edward Jackson, of that city, is president, and Dr. D. T. Vail, of Cincinnati, is secretary.

Popular Medical Fads.—The daily press during the past week has again aired the fantastic theory that appendicitis is a natural sequel to influenza. It is now

asserted that influenza associated with a meat diet is an almost unfailing cause of the fashionable disorder.

Mississippi Valley Medical Association.—The Thirtieth Annual Session of the Mississippi Valley Medical Association will be held at Cincinnati, O., October 11, 12 and 13, 1904, under the presidency of Dr. Hugh T. Patrick, of Chicago. The headquarters and meeting places will be at the Grand Hotel. The annual orations will be delivered by Dr. Wm. J. Mayo, of Rochester, Minn., in Surgery, and Dr. C. Travis Drennen, of Hot Springs, Ark., in Medicine. Request for places upon the program, or information in regard to the meeting, can be had by addressing the secretary, Dr. Henry Enos Tuley, Louisville, Ky., or the assistant secretary, Dr. S. C. Stanton, Masonic Temple, Chicago, Ill.

Clothing as Physical Records.—An excellent illustration of the value of records has been afforded lately regarding the question of physical degeneracy. A firm in the north of England has compared the measurements for clothing made two generations ago with those of to-day, the results going to show that chest and hip measurements are now three inches on the average more than they were sixty years ago. The same conclusion is reached by the experience of the manufacturers of ready-made clothing.

Cholera Epidemic in Asia.—A dispatch from Odessa says that the Government is establishing with all haste a medical and military cordon in Trans-Caucasia against the importation of cholera from Persia. There are said to be 300 deaths daily in Teheran and that the cholera epidemic is rapidly spreading throughout Northern Persia. Minister Allen, at Seoul, says he has learned from a missionary surgeon that cholera has crossed into Manchuria and appeared at An-Tung.

Newark's Water Supply.—In his report to the Board of Health, Dr. R. N. Connelly, the city bacteriologist, shows that Newark's $6,000,000 water supply is contaminated, and that the source of impurity is at the headwaters of the great system. So far, the water taken from faucets in various parts of the city has been found to be practically pure. But the fact that impurities were in evidence in the water taken at various points in the watersheds was sufficient to alarm the Health Board, and in consequence a trip will at once be made to the sheds and a thorough inspection will be made with a view to locating the cause of the contamination.

Health of Russian Army.—An official report on the health of the army in Manchuria shows that up to June 26 the officers and men in hospital in the field reached a total of 7.136 per cent. and 3.043 per cent. respectively of the whole force. If the wounded sent to the rear were included the percentages would have been 10.24 and 6.51 respectively. After the rains began on July 9 the percentage of officers in the hospitals became 8.383 and of the men 4.646. The proportion of infectious cases rose from 2.19 to 8.52, including 1.99 per cent. of dysentery cases.

Milk Dispensaries in Baltimore.—Five milk dispensaries have been opened in Baltimore under the auspices of the Thomas Wilson Sanitarium, and modifications of milk will he supplied (three pints) at the rate of ten cents a day. The milk is intended not only for infants, those who are already sick or ailing, but also for well children, the circumstances of whose parents would otherwise prevent their securing a proper diet. A card from a physician or dispensary insures the distribution of the specified mixture to an applicant as long as required, the milk being supplied in individual feeding bottles, which are returned the following day. An experienced nurse or a physician is in attendance at each station, and in general an admirable dispensary system has been arranged to supplement the work of the sanatorium, which, during the summer months, each year cares for a number of children suffering from intestinal disorders. The possibilities of more searching preventive work through a dispensary system will be given a thorough test.

Cancer Research.—The English General Committee of the Cancer Research Fund, at its meeting in London, on July 8, made an important report, no doubt, but, we regret to say, one that carries more negative than positive information. We are simply told that cancer is not an infectious ailment, is not transmissible from one species to another, is not caused by a parasite, that radium has been found to exercise no curative effect, that a serum has been discovered from which good results are hoped and that the cancer cell can reacquire powers of self-propagation. Thus the real cause of malignant growths is yet undiscovered. That we must still submit to surgical operation as the one and last resort is the conclusion forced upon us. The greatest danger is in delaying such treatment. The Prince of Wales, who presided at the annual meeting of the committee, gave the true practical turn to the proceedings when he urged the public to *"consult the surgeons on the first appearance of any cancerous symptoms."*

The Red Cross in Japan.—The following extract from a private letter sent by an English visitor in Tokio has been printed in the London *Times:* "One admires the way the women of the country fall into their places as a support to the army medical service in the war. All the male personnel are drafted from the hospitals in the home territory and join the columns of the field army. The women nurses step into their places in the hospitals in Tokio and elsewhere, and carry on the work of nursing sisters. They are all fully trained during a three years' course at hospitals belonging to the Red Cross Society or at other civil hospitals. I recently visited the Juntendo Hospital here, and saw the system of training. This hospital, which is the oldest and at the same time one of the newest in construction, as the old buildings are being pulled down and buildings on a new plan erected, employs only women nurses, and trains them in the hospital. They go through a theoretical and practical course of about three years after they have been trained. This is only one example of the resources of the country in supplying the hospitals with trained female attendants. I have just seen a large operation at the University Hospital, where the instruments were looked after and the dressings arranged, etc., by Japanese women, and nothing could have been done more skilfully or more in accordance with the principles of asepsis. There are thousands of Japanese women of every class of society fully trained, and as expert and sympathetic as any of our own women can be, with full knowledge of their folk such as no newcomer can ever have, working under definite Government regulations in the army hospitals. Our own women might well take a lesson from them in the way they do their work, without ever considering whether they are getting kudos or not, and never thinking of gaining that sensational form of experience, for a woman, which consists in 'going to the front.'"

Remedy for Leprosy.—The London *Times* correspondent at Rangoon, Burmah, says that Capt. E. R. Rost of the Indian Medical Service has succeeded in cultivating the bacillus of leprosy. He has made a substance from the cultures which he calls leprolin, and which, when injected into lepers, has marked beneficial action, alleviating the symptoms of the disease. Captain Rost has discovered that the method of growing the bacillus of leprosy is to extract the salts from the nutrient media, and that the bacillus of leprosy will not grow in the presence of the salt. In order to make

such nutrient medium he distills beef extract soaked in pumice-stone in a current of superheated steam, and obtains a medium in which the bacillus of leprosy and, also, that of tuberculosis grows with the greatest ease. Leprolin is made on somewhat similar lines to those first employed by Professor Koch in the manufacture of tuberculin. Over one hundred cases of leprosy are being treated in Burmah by injections of this substance, and the treatment is also being tried in thirty places in India. Already four cases have been reported cured, and in the great majority of those under treatment the improvement is marked.

Railroad Accidents.—It seems, according to the annual report of the Interstate Commerce Commission, that during the year ending June 30, 1903, no less than 86,393 persons were either killed or injured on railroads in this country. Rather appalling figures, it would seem —figures that suggest campaigns and battlefields, rather than the sober report on the conduct of certain business enterprises. It is interesting and instructive to compare these figures with the showing made by the railways of Great Britain during the corresponding period. These figures are also from an official report and reflect on the American management in no flattering manner. For example, Great Britain's 22,380 miles of railways carried in 1903 nearly twice as many passengers as were transported by the 203,132 miles of railways in the United States, and yet in the United Kingdom there were only 235 collisions and derailments, as against 10,643 in this country, and only one passenger killed for every 47,793,320 carried and one injured for every 1,540,745 carried in the United Kingdom, as against the American figures given above. Conditions in the two countries differ doubtless, but conditions alone can hardly account for so amazing a difference in the railway casualty lists of the two countries. Negligence verging on the criminal seems indicated somewhere in the American system.

Doctors and Their Fees.—In a medical case which was tried in London before Mr. Justice Darling last week it was stated that the usual fee for attendance and medicine in the poorer districts of London is 6d. As a matter of fact the 6d. fee is by no means confined to the East-end. In Chelsea, for example, which is not a slum district, a doctor has recently set up a dispensary where advice and medicine can be had for 6d. In point of fees there is a curious contrast between the medical profession in England and Ireland. In the suburbs and country districts of England medical men of the highest standing often charge no more than 5s. a visit, while in Ireland doctors of the same standing never dream of charging less than £1 1s. At first sight it appears as though only the well-to-do could afford the luxury of a doctor in Ireland, but although Irish doctors consider it beneath the dignity of their profession to charge less than £1 1s. they often consider the pockets of their patients by paying four or five visits for that sum.

The Heatherside Sanatorium.—The opening by the Prince and Princess of Wales of the new country extension of the Brompton Hospital for Consumption and Diseases of the Chest at Heatherside, Camberley, Surrey, England, took place on June 25 in the presence of a large and interested gathering. In the unavoidable absence of the Earl of Derby (president of the hospital), an address to their Royal Highnesses was read by Lord Cheylesmore, in which it was stated that the foundation of the original hospital in the Fulham Road had been laid in 1844 by the late Prince Consort, and the foundation-stone of the extension wing in 1879 by King Edward VII. (then Prince of Wales), and that the institution had from its commencement enjoyed the support and patronage of the royal family. A further development of the hospital was the sanatorium and convalescent home to be opened that day by their Royal Highnesses. This new building was intended for the open-air treatment of tuberculosis and for convalescent cases from the parent institution, and was designed to provide accommodation for 100 patients of both sexes. The need for such an extensive development had been rendered urgently imperative in consequence of the advances of modern science in the treatment of consumptive patients, also by reason of the increasing impossibility of obtaining admission for such convalescent patients to any of the existing convalescent homes. The cost of the site and building, furnishing, etc., would amount to £70,000, and the maintenance of the new extension would entail an increased annual expenditure of some £10,000. Being one of the first institutions of the kind for treating gratuitously on the open-air system the poorest classes from all parts of the country, the committee felt that it was entitled to the support of the public at large.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

London, June 18.

THE SECRET OF PERPETUAL YOUTH—SKIPPING AS AN EXERCISE—ABUSE OF HOSPITALS—THE PUBLIC HOUSE AS A SOURCE OF CONSUMPTION—ANOTHER INFALLIBLE CURE FOR CONSUMPTION—DEATH OF A PROMISING BACTERIOLOGIST.

Professor Metchnikoff, of the Paris Pasteur Institute, is distinctly what the French call an *homme sérieux*, otherwise one would be tempted to suspect that he amuses himself by practising on the gullibility of the public. Every now and again he leads unwary persons to imagine that he has discovered the secret of perpetual youth. He has lately been unbosoming himself again on the subject of old age, which he regards as a chronic disease, the cure of which is not impossible. On this text several of our newspapers have for some days past been discoursing most eloquent nonsense. For this the Russian investigator must to a large extent be held responsible, for he throws out oracular hints as to specific serums that are to slay the microbes which lurk within the body seeking for an opportunity to lay waste the house of life. This supplies a basis on which the journalistic imagination constructs a theory that there is a microbe of old age which must therefore be regarded as a contagious disease. The new Pentacle of Rejuvenescence, when looked into, fades into the mere shadow of a dream. The serums which are to enable the organs and tissues to withstand senile decay are yet to be found, and when found their utility is purely theoretical. So far from having found a cure for old age Metchnikoff has at present nothing better to offer us as a preventive than soured milk. Apart from the degenerative changes in the kidney, liver, brain and other organs which are the expression of senile decay, the main source of danger to man, according to Metchnikoff, is his own large intestine. This is a haunt of microbes which poison the system by their baleful chemical products. His account of the intestinal flora reminds one of the description of the Upas tree breathing death to all who come within its sphere of influence. The soured milk is intended to kill this pestiferous vegetation. But the most effective remedy would be to free man from the breeding ground in which it grows so luxuriantly, by removing the large bowel

which is a superflous relic of a remote ancestry, and is now a cesspool of filth that is a standing menace to health and to life. Metchnikoff is not prepared to advocate this heroic treatment at present, but he believes that in the distant future the operation will become general. He is evidently unaware that it has already been performed by an English surgeon, Arbuthnot Lane, of Guy's Hospital, London, not exactly with the intention of making man immortal, but as a means of relieving constipation which proved refractory to treatment, and thus indirectly prolonging life. Lane's account of the process of reasoning by which he screwed his courage to the point of cutting out the large intestine is interesting. While operating on a case of recurring obstruction of the large bowel at the hepatic flexure which had been diagnosed by the patient as being due to cancer of the hepatic flexure and by his medical advisers as renal colic, he became alive to the mode in which constipation of adhesions and of a mesentery which were able to interfere very effectually with the mechanics of the cesspool of the intestinal tract. It was then apparent that the condition of the appendix was entirely secondary to that of the secum, and to obtain complete relief from symptoms it was necessary in many cases not only to remove the appendix but also to divide the constricting bands which controlled the lumen of the large bowel. This he did in a large number of cases, in many of them with the greatest advantage. He endeavored to render the benefit as permanent as possible by insisting on great attention being paid to the bowel subsequently by the use of purges, enemata, massage, exercises, etc. In a certain proportion of the cases, however, a recurrence of the symptoms ensued. He then came to the conclusion that these patients could not be benefited permanently by the treatment of effects, as no satisfactory means of dealing with them were available, and that to ensure peace and comfort to the sufferers in the future the cause of all the trouble must be removed. It was apparent that these patients lost as much by the absorption of ptomains, etc,. from the feces during the prolonged stay in the large intestine as they gained from the absorption of any nutritious and useful material. Some geographical bore complained that Francis Jeffrey had d——d the North Pole, and Sydney Smith tried to soothe him by saying that he had heard the editor of the *Edinburgh Review* speak disrespectfully of the equator. He could not have spoken more disrespectfully of it than Lane speaks of the colon. Not believing, says he, that the colon plays a very important part in the present state of civilization, he determined to divert fecal matter altogether from this part of the bowel, to convey it directly from the ileum into the upper part of the rectum, or into the sigmoid if the rectum did not lend itself readily for the purpose. He knew from the results of this operation in cases of cancer that patients of the class referred to would not be exposed to any unjustifiable or serious risk, and would not be deprived of any useful function. At first he attempted to exclude any passage of feces into the cecum by establishing between the end of the ileum and the rectum or sigmoid an anastomosis sufficiently large to prevent subsequent closure. For this purpose it is necessary to build the ileum into the large gut so that the circumference of the combined bowel shall not exceed the original circumference of the large intestine. This is done by cutting away half the circumference of the ileum and a corresponding amount of that of the large bowel and lacing together the edges of the apertures. Lane soon came to the conclusion that the only certain means of putting the large bowel entirely out of gear, when the rectum is overloaded with feces, is to make an ordinary lateral anastomosis between the ileum near its termination and the upper part of the rectum or the sigmoid as may be most convenient. After this is done the ileum is divided between the seat of anastomosis and the cecum. This arrangement is safer than the division of the ileum and the implantation of its proximal end into the large bowel. Lane says he is sure that the principle involved in the cutting off from the intestinal tract of almost the entire length of the large bowel, "which to a certain class of persons is a distinct detriment rather than a source of strength, will have a very extensive application in future in surgical practice."

Dr. Francis T. Bond, of Gloucester, has hitherto been best known to fame as the founder and energizing spirit of the Jenner Society and a sturdy champion of what antivaccinists call the "Jennerian rite." He has now come forward (in the *National Review* for June) as the strenuous advocate of skipping as the best form of exercise for the preservation of health. To most people the mention of skipping will only bring back memories of early childhood. But the trained athlete, says Dr. Bond, knows that it holds a high place in the repertory of exercises which the candidate for athletic honors of whatever kind practises in order to develop firmness in his muscles generally, capacity of breathing power and the maintenance of sustained effort. Jem Mace, a well-known hero of the prize ring in the middle of Queen Victoria's reign, used it largely to get himself into fighting condition and especially to develop agility. One of the special advantages of skipping is said to be the ease with which it can be graduated to the capacity of the feeblest tyro. It is impossible to skip except in a rhythm of some sort, "and the skipper who adjusts his movements to a definite rate per minute may be assured that in ten minutes he is expending just ten times the energy that he expends in one minute, with a greater certainty that he can have in the case of any other exercise except walking." There are, we are told, few bodily troubles except those which depend upon radical unsoundness of the vascular system, involving the risk of hemorrhage as the result of sudden exertion, that will not be benefited by skipping. For the melting of "too, too solid flesh" there is nothing like it. The result of this strong recommendation from a physician of repute like Dr. Bond, will doubtless be that numbers of elderly citizens who, like Hamlet, are fat and scant of breath, will take to going through intricate evolutions with the skipping rope in their back gardens.

At the International Home Relief Congress, held last week at Edinburgh, one of the subjects discussed was the abuse of hospitals by well-to-do people, a very sore point with general practitioners in this country. Professor Glaister, of Glasgow, said that from statistics it appeared that the number of applicants for free relief was increasing every year, and that the proportional increase was greater than was warranted by the natural increase in the poorer population. If the claim for free medical attendance were to be satisfied in proportion to the increased demand for it, a time would soon come when some step must be made either to limit the extent to which such aid was to be given, or to test the need of the applicants for such eleemosynary assistance. The need for inquiry into the fitness of applicants was so obvious that a movement in that direction had taken place in various large hospital centers. Meanwhile, something might be done by hospitals setting apart a ward or wards for patients who are willing to contribute some portion of the expense of their maintenance. The key to hospital reform seemed to him to be a method

which would insure that the functions of an hospital were being directed and kept in proper channels—namely, for the benefit of the poor for whom they were intended. Whether that method was to be found in an income test, in the establishment of provident dispensaries to which applicants for medical relief would contribute something per visit to a common fund, and in the cooperation of hospital and dispensary authorities, the general public, and the medical profession, was a subject requiring serious consideration. Dr. Clouston, President of the Royal College of Physicians, Edinburgh, said there was a danger of lowering public opinion and the self-respect of the population by such practice as the abuse of hospitals. It was a great social question, for if any community accepted, a great injury was done to the whole body politic. Dr. James Ritchie, president of the Obstetrical Society, Edinburgh, said the present system of hospital relief tended to pauperize the people. He should like to see put into operation some national scheme of insurance against sickness, such as was in operation in Germany. After a good deal of discussion the following resolution was carried: "That, in the opinion of this Congress, the time has now come when, with a view to the proper direction of charitable effort and the prevention of hospital abuse, close relation should be established between the hospitals, dispensaries, the medical profession and the public, for the regulation of indoor and outdoor relief of sick poor by the institution in every populous center of a general hospitals committee, composed of representatives of (1) hospital, dispensary and nursing boards, (2) hospital and dispensary staffs, (3) general practitioners, (4) contributors, and (5) wage-earning members of the community, for the purpose of determining, "inter alia," (*a*) the conditions of admission to hospital and other medical relief, (*b*) the collection of revenue, (*c*) the prevention of overlapping, and (*d*) such other questions as experience may suggest."

Dr. Niven, Medical Officer of Manchester, some time ago brought a strong indictment against the public-house as a source of phthisis, supporting his contention by a mass of statistical evidence. This view is shared by Dr. Arthur Ransome, who is one of our leading authorities on tuberculosis. In a paper published in the *Medical Chronicle* for May, he says the public-house, viewed from a sanitary point of view, is certainly an object of suspicion as an infective center. It not only shares the likelihood of tuberculosis contamination with other places of public assembly, but has special dangers of its own. Its bars and taprooms are usually dark, dirty and ill-ventilated. They are often overcrowded, especially in the evening, by crowds of workmen and loungers, many of them consumptives. These people spit freely both into the spittoons, containing sawdust or sand, and onto the floor. The floors are for the most part covered with dry sand or sawdust, and are only swept occasionally, perhaps once or twice a week. The sputum from their occupants, much of it charged with virulent tuberculous material, is mixed with the sand or sawdust: it is dried up and ground into fine powder under the heels of the drinkers. When it is swept up, some of it flies into the air, and floats there on delicate wings of mucous or epithelial scales. It is thus capable of being conveyed into the lungs of susceptible persons, and of transmitting the disease. Add to all this risk the probability that spray from the coughing of some consumptive may also pass into the air breathed by others, and we cannot be surprised that tuberculosis infection arises from this source. Dr. Ransome endorses Dr. Niven's recommendation that public-houses should be placed under strict legislation in regard to cleanliness, and that spitting in public-houses should be forbidden.

A retired medical practitioner of Cornwall, who is now Mayor of Dartmouth, has announced to all whom it may concern that he has discovered an infallible cure for consumption. It is scarcely necessary to say that this intimation has been conveyed to the public not through the medical journals, but through the lay press. The Mayor considers Koch's treatment entirely wrong because it is "at variance with nature." His own method has at least the merit of simplicity. All you have to do is to take bacilli infinitely more powerful than that which produces tuberculosis and inoculate the patient with them. The stronger will kill the weaker, and will then in the most accommodating spirit follow their victims into the silent land. Dr. Searle has written to Mr. Rockefeller asking for a part of the million and a half dollars which the American millionaire is understood to have offered to any one who shall discover a cure for tuberculosis. The doctor wants nothing for himself, however; what he needs is a laboratory in which to prosecute his researches. It would seem that he also requires patients on whom to try his treatment. He does not ask for doubtful cases, but for such as are practically hopeless. "Place them under my treatment," he says, "and I say unhesitatingly they will recover." He at first refused to reveal his method, saying that he was writing a book in which it would be fully known. Within the last few days he has announced that his idea is to fight the germs of tuberculosis by the aid of typhoid germs. He declares that in his experience, and the experience of many physicians of long standing, they have never met with any one suffering from organic disease, consumption or cancer, dying from typhoid fever. He gives illustrations in which, when typhoid has attacked consumptive patients they have invariably recovered, both from typhoid and tuberculosis. He advocates inoculation, according to his method, of children whose family history is pronouncedly tuberculous or cancerous.

Dr. Louis Jenner, one of the most promising of our bacteriologists, died a short time ago of typhoid fever. He had been making experimental researches on that disease at the Lister Institute, and it is at any rate possible that he has fallen a martyr to his scientific enthusiasm. One of our foremost pathologists nearly died a few years ago of typhoid fever contracted in making post-mortem examinations. Those who are curious about coincidences may be interested to know that he was a son of Sir William Jenner, whose work so largely contributed to place the doctrine of the non-identity of typhus and typhoid on an unassailable basis.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

Section on Genito-urinary Diseases.

Stated Meeting held March 16, 1904.

The President, James Pedersen, M.D., in the Chair.

Perineal Galvanocautery Prostatotomy (two cases).—Dr. F. Tilden Brown presented these two patients for the purpose of bringing out an expression of opinion from the members of the Section as to whether they were not now in a position to classify the different forms of prostatic obstruction so as to select and practice that form of operation best suited for the relief of the disability. He felt satisfied that the age and constitutional state of the patient should be given due consideration as well as the

size, character and good of prostatic impediment. Even where the patient was not old and in good enough health to presumably undergo any ordinary operation, the more extensive and so-called radical procedures were not necessarily always the ones offering the best remedy for the symptoms. This is believed to be exemplified with the following:

Case I.—C. G., sixty-four years old; was admitted to Bellevue Hospital Dec. 13, 1903. Discharged cured March 14, 1904. Diagnosis: Prostatic bar, causing complete retention, cystitis and abscess of the scrotum. Family history, negative. Parents lived to an advanced age. Personal history: Generous alcoholic habit; fifteen years ago, right incomplete inguinal hernia. Three years ago, incomplete left inguinal hernia. Eight years ago, because of no favorable opportunity, he permitted a day to pass without urinating. At night he found himself unable. This disability continued two more days when catheterization drew an immense quantity. For two weeks following he catheterized himself and then had so painful a cystitis as to require hospital treatment for three months. When discharged the painful character of the cystitis was cured, but complete retention has always necessitated the use of the catheter. Since the institution of catheter life he has had a number of attacks of painful swellings of the testicles. Ten days ago a similar trouble appeared on the right side, eventuating in a large abscess of the scrotum. For this he entered Bellevue Hospital. To the inner side of the abscess an indurated mass led to the diagnosis of tuberculous epididymitis. Four incisions, curettage and gauze drainage was attended with prompt healing. A streptococcus was recovered by culture. Microscopical examination of tissue and pus failed to show tuberculosis. From the time of admission an aggravated cystitis was also treated, and the conditions causing his complete retention were studied. A rubber catheter was accepted without difficulty. The urinary distance was 9¼ inches, and the urine, to the last drop, was expelled through the catheter with considerable force. Digital examination of the rectum showed only a rather flat expansion of a moderately enlarged prostate. Up to this point the inference was that a pedunculated middle lobe was the cause of retention, but a cystoscopic examination showed the impediment to be an interprostatic bar or lip. A galvanocautery incision of this and the two slightly protruding lateral lobes were believed to offer admirable promise of cure of the symptoms. The operation was done on Feb. 13, 1904. Since the preliminary steps in the technic of Young's prostatectomy and Chetwood's prostatotomy are with advantage carried out in the same way, the operator, by being equipped with the instruments for both procedures, may, in cases somewhat similar to this, defer the decisive choice until the finger has explored the bladder. Such a plan was pursued in this case, but here the sense of touch only verified the cystoscopic picture, and prostatotomy was proceded with. One median and a right and left lateral incision was made with the cautery knife. A large perineal catheter was retained for eight days. Convalescence was uninterrupted. At the end of one month the perineal fistula closed and all of the urine was voided through the urethra. The retrograded telescope of Dr. Brown's composite cystoscope shows the three furrows made by the cautery knife. Although the test of several different observers have here concurred in finding no residuum whatever after urination, he asked permission to make this test again before the Society. (In this test Dr. Kammerer kindly assisted and reported that there was no residual urine after voluntary urination.) Although the patient dates his functional disability from the time of an aggravated inattention to a full bladder there is reason to believe that for a considerable time antedating this occurrence he had been unconscious of incomplete evacuation, as is the case with many prostatics. Notwithstanding the perfect ability here shown to empty the bladder the speaker would not maintain that under the influence of certain vesical irritants enough congestion of the vesical meatus might ensue to cause temporary, moderate retention.

Case II.—H. S., seventy years old; minister; entered the Presbyterian Hospital Dec. 17, 1903. Diagnosis, prostatic hypertrophy. Family and previous history, negative. Severe cystitis, frequent and painful voluntary urination, five to eight ounces of residual urine. Present history: Eight years ago he noticed frequency of urination. Two years ago got wet and chilled during duties which offered no chance to urinate for six hours, and was then unable. He was catheterized and entered a New York hospital, where prostatectomy was advised, but declined. After a month's treatment he was discharged much improved and able to carry on his work for nearly two years without resort to the catheter. When two and one-half months before entering the Presbyterian Hospital and after an exposure similar to the first he had retention. He was now taught the use of the catheter and went South. One month later catheterization became difficult and painful. Friends and physician advised him to come North and submit to a galvonocautery operation. Only after admission to the Presbyterian Hospital, after being prepared for and within a few hours of the time fixed for a prostatectomy, did the patient definitely state this restriction. At this juncture Dr. Brown was asked by a colleague if he could operate. Both were satisfied that the conditions presenting were admirable ones for choosing a perineal prostatectomy in prefernce to any other operation. Rectal examination showed a prostate 1½ by 1¼ inches, its size most conspicuous at the apex, where on the right side it was nodular and very hard, and at the left upper apex can be felt a hard, cordlike extension, perhaps a seminal vesicle. Galvonocautery prostatotomy operation with gas and ether was done Dec. 19, 1903. On opening the membranous urethra, only after instrumental dilatation could the finger be forced into the bladder. The intravesical extension of the lateral lobes was trifling, between them a fine tight bar was stretched; three galvonocautery incisions were made, and large perineal catheters secured. Apart from vivid nightly hallucinations the patient had a satisfactory convalescence, without rise of temperature and comfortable vesical drainage. He was discharged Feb. 3, 1904, with history notes showing a considerable improvement. Residual urine now varied between two and four ounces, and a catheter, when needed, can be passed without opposition. One week after dischage he had a sudden onset of right epididymitis, with chills and fever. He was readmitted on Feb. 10; chills were repeated. Six days after admission there was epididymitis of the left side. Rest and local applications were followed, at the end of two weeks, by subsidance. On March 1, while still in bed, he had an attack of retention requiring catheterization, when 13 ounces were drawn. Antiseptic, vesical irrigation were now begun again and the patient's bladder brought to nearly the same condition as when he left the hospital; but the general constitutional state was not so

good. In this case, although lowering the vesical outlet by cautery incision probably explains lessening the quantity of residual urine and the easier catheterization prostatectomy would have given vastly better results, for the hard, irregular prostatic masses surrounding the urethra prevent any of the normal elasticity. Undue exposure to wet and cold is apt to result in sufficient congestion to again cause complete retention.

Because the case illustrated one of the rather unusual symptoms of tuberculous epididymitis and vesiculitis, which may be alluded to in the paper of the evening, yet to be read on that subject, Dr. Brown asked permission to present a patient recently referred to him with a typical urethral discharge.

Case III.—G. E. D., forty years old; merchant; first seen Jan. 29, 1904. Family history: Some relatives on his father's side had had tuberculosis. Patient's brother had been sent to Saranac Lake for pulmonary trouble. Personal history: He had always considered himself well and vigorous; had had the general diseases of childhood; had had no form of venereal disease. Skin was very susceptible to poison ivy or any irritant. Has had many attacks of herpes. In the summer of 1898, and again in 1900, without appreciable cause, he had blood in his urine. Each time he was kept in bed for about a week, when the symptom disappeared. During the past three months he has had an unusual sense of fatigue and has lost ten pounds. He has a feeling of abdominal pressure or constriction which frequently makes him take a short gasping inspiration. Friends have remarked about his pallid color. Present history: Six weeks ago, about ten days after last coitus he noticed a slight moisture at glans penis; on examining the meatus he saw a single white drop. His physician had careful examination made to determine the nature of the discharge with negative results. Various injections and internal medication have not influenced the discharge, which has never been profuse or yellow. There have been no subjective symptoms. Three days ago, on Jan. 26, while walking, he felt his clothes pressing his right testicle; examining the organ, he found it larger and much more sensitive than the left. This new development, in connection with the persistent discharge, led to his being referred to me. X-ray examination showed no lung opacities. Genital examination showed a normal meatus, a thin, mucopurulent drop just within required a platinum loop to detach. Two glass slide mounts were made, the first stained with gentian violet. Pus and mucus only were seen. No microorganisms of any kind were found. The second slide was stained for tubercle bacilli with negative result. The microscopic picture, *i.e.*, a great umber of leucocytes with a striking absence of microorganisms is one so commonly met with in renal tuberculosis as to always lend additional weight to a preconceived suspicion of the disease. Urine passed in four conical glasses: (1) clear but for one or two small filmy flakes; (2) clear; (3) clear; (4) and last decidedly turgid. Part of the fourth glass centrifuged and examined showed the same pure pus fields without microorganisms. A number of slide stains for tubercle bacilli were negative. Examination of scrotum showed superficial veins more prominent on right side, and skin noticeably warmer, evidence of a slight accumulation of hydrocele fluid. Globus minor the size of a marble and hard; no leaking of the vas (since that time slight beading of the vas has developed), but there is some edematous fulness about the right cord. Rectal examination showed prostate a trifle above normal size, slightly prominent in the median and inferior part. The right ejaculatory duct and the ampulla of the vas are enlarged and of pipe stem hardness, but not very sensitive. Neither vesicle so far as can be reached is distended or hard. Nothing appears at the meatus after the Neal examination but one-half ounce of urine now passed is turbid with pus. No appreciable spermatic fluid. Again the search for tubercle bacilli is negative. Endoscopical examination shows a normal anterior urethra. The prostatic urethra about and anterior to the caput galligaginis is edematous and congested. The features of special interest in the case are: (1) the two previous attacks of hematuria may probably have had their source in or close to the right seminal vesicle; (2) the present urethral discharge and the pus in the last portion of the urine quite certainly had such a source. The fact that the preceding two or three glasses are perfectly clear bars out any part of the urinary tract. The phenomenon then has its explanation in a compression and expression of the purulent contents of the ampulla of the right vas and seminal vesicle when toward the end of micturition the levator ani and ejaculator urinæ come into action to complete the act.

Dr. L. Bolton Bangs said that, in his observations on the use of the galvanocautery or Bottini method, he had learned that soft prostates and not large ones were most amenable to this treatment, which was often followed by brilliant success. In a general way it might be stated that a prostate in which the fibrous structures were the most developed one should not expect too much from the galvanocautery operation. He wished to reaffirm what he had so often before stated that the operation of choice was perineal prostatectomy.

Dr. F. Tilden Brown said that the different conditions which had characterized the two cases he presented were: In the first the prostate enlargement as a whole was insignificant and flat except for the somewhat wedge-shape base at the vesical neck, making it a favorable one for galvanocautery prostatotomy because of this bar at the internal meatus. Whereas in the second case a rather large, hard and irregularly nodular prostate with a base which was most prominent forward and coming well in front of the prostate urethra made any such operation futile and was a suitable case only for perineal prostatectomy.

Multiple Septic Infarction of the Kidney; Nephrectomy.—Dr. A. A. Berg presented a patient who was perfectly well until the early part of last summer, when a tight shoe caused a slight abrasion of one toe. A physician was consulted at the time and he found a slight infection of the abraded area. This was dressed and the parts healed by granulations and closed up. The abrasion had been closed about one week when the patient complained of pain in the left loin, which passed down toward the bladder. Coincident with this pain there was some fever, the temperature rising higher in the evening than in the morning. This persisted for some weeks. Then a rectal examination made by his attending physician revealed a mass in the neighborhood of the prostate, which was fluctuating and tender. A diagnosis of prostatic abscess was made and through an incision per rectum considerable pus was evacuated. The urine, so far as the patient knows, remained clear. There was no increased frequency or pain in passing water. The rise of temperature after the evacuation of the pus continued and the pain in the

left loin persisted. A diagnosis was then made of tuberculosis with a possible involvement of the left perinephritic region. There were no chills or any evidences of bladder or urinary symptoms outside of the pain in the left loin. The patient went from bad to worse and was finally admitted to Mount Sinai Hospital, where he came under the treatment of Dr. Berg. This mass in the left loin was noted and corresponded to the left kidney. It was retroperitoneal, edematous, boggy, and deep fluctuation was elicited. Rectal examination revealed the scar of the incision. The prostate itself was apparently normal; its upper margin could be palpated. The incision in the rectal wall seemed to be above the prostate and appeared to surround the left ureter. Cystoscopic examination of the bladder showed the ureteral orifices to be normal. The catheter in the right ureter obtained clear urine but an attempt to catheterize the left ureter was met with failure. The catheter was blocked one-half an inch from the ureteral orifice. He thought possibly the catheter first used was too large and attempted to pass a smaller one, but could not go beyond that same point in the ureter. The cryoscopic examination of the urine and blood showed the kidney sufficiency to be normal. The left kidney secreted nothing during the visual examination. A diagnosis was made of perinephritic abscess secondary to a kidney complication and an operation was advised and performed. The temperature on admission was above 104° F., pulse 120, the patient's condition bad. He was much emaciated, having lost 40 pounds in his illness. Two days after admission the left kidney was cut down upon and a large perinephritic abscess was evacuated. The kidney could be felt at the upper angle of the incision and a number of fluctuating areas could be easily palpated. Aspiration of its lower pole yielded pus, which contained the *Staphylococcus aureus*. No blood culture was made. Delivery of the left kidney was not done because of the danger of infection from the supperating perinephritic tissues. It was thought best to drain the abscess and allow the sloughs to separate. Accordingly a Mikulicz tampon was introduced and the patient placed in bed. For twenty-four hours the temperature declined; then the patient had a chill with rise of temperature to 105° or 106° F. During the next five days the patient had three chills with coexistent high temperature. Although the perinephritic wound was still in a sloughing condition, it was thought that any further delay in the removal of the primary focus of suppuration would be more detrimental than working through such tissues. The original wound was then enlarged and the left kidney cut down upon and pealed out of its fibrous capsule and delivered, its pedicle ligatured and the organ amputated. It was found to be studded with multiple abscesses containing *Staphylococcus aureus*. The wound healed kindly and the ligatures came away on the second week. Since operation there have been no urinary symptoms. Dr. Berg took it that the patient had multiple foci of infection, a descending ureteritis of a suppurating nature, with abscess around the lower end of the ureter. Such a periureteric abscess was incised rather than a prostatic abscess.

A New Method for Radical Operation for Malignant Disease of the Urinary Bladder.—Dr. A. A. Berg presented a woman of thirty-two years, to illustrate a new method for radical operation for malignant disease of the urinary bladder, especially of its posterior wall and floor. He first saw the patient in July, 1903. She suffered from a far advanced carcinoma of the uterus, vagina, both broad ligaments and *bas fond* of bladder. In view of her young years it seemed to him that an attempt might be made to prolong life by a complete removal of the neoplasm and the indurated uterine iliac lymphatic glands. The patient and her friends readily consented to operation, though little hope for ultimate cure was given, and though the risks of the operation were clearly stated. She was admitted to the Mount Sinai Hospital and operated upon by Dr. Berg in July last. The ureters were catheterized preliminary to the operation. The abdomen was then opened in the median line. The uterus, appendages and broad ligaments were found to be extensively involved, likewise the internal iliac glands and lymphatics, and the right posterior wall of the bladder; the right ureter passed directly into the mass. The uterus, appendages and internal iliac glands and lymphatics up to the bifurcation of the common iliac artery were removed in one piece. The bladder was opened below the peritoneal reflexion on the posterior surface just above the affected area. The cancerous tissue was excised together with the lower end of the right ureter; the proximal stump of the ureter was at once implanted into the summit of the bladder. The bladder defect was closed by catgut sutures for the mucosa and silk passed, cushion-mattress fashion, for the muscularis. The pelvic cellular tissue was drained *per vaginam* and the pelvic peritoneum completely closed. A complete closure of the abdominal wound was made. Permanent catheter was left in the bladder. The speaker was impressed with the ample space and ease of access this intraperitoneal route afforded for attacking malignant growths of the posterior wall and floor of the bladder. Furthermore, the intraperitoneal route was the only method by which the internal iliac glands and lymphatics up to the bifurcation of the common iliac artery could be exposed and removed. If these glands and lymphatics were not removed the operation was not radical and no permanent cure could be expected. The loss of blood was very little, and the shock, even after prolonged operation, was very slight, as there was no exposure of the viscera. The speaker's patient made an absolutely uninterrupted convalescence. The bladder and ureter healed kindly and there was never any leakage. The capacity of the bladder was not materially diminished. The patient gained 25 pounds after operation. She felt perfectly well until about two months ago, when she complained of some pelvic pain. Recently a recurrence of the carcinoma in the pelvis had been noted. She was still in good health and suffered very little.

Dr. Fred. Kammerer believed that laparotomy would of course give a better view of the bladder and give easier access to the seat of disease. As Dr. Berg was, no doubt, aware, this method of procedure (free incision of the peritoneum) was not a new proposition in the operations upon the bladder. Combined, in cases of cancer of the bladder, with thorough extirpation of the lymphatic glands on the floor of the pelvis, it was, according to the speaker's conviction, a very grave procedure. During the last decade more especially it had been generally acknowledged that progress toward securing permanent results could only be made, in cases of cancer, by the adaptation of methods which included the removal of the infected lymphatic glands. For example, the radical cure of cancer of the mamma, according to Halstead, gave much better results

than extirpation of the mammary gland with removal of only the axillary glands. But, he said, the operation suggested by Dr. Berg, of thorough dissection of the pelvic lypmhatics in cancer of the bladder, was not a parallel case. He said that it was well known that the peritoneum could overcome a certain amount of infection when its vitality had not been injured, but the danger of peritonitis was vastly increased by the manipulations necessary to remove the pelvic lymphatics, and this was shown by the increased mortality of Wertheim's operation for removal of cancerous uteri. In the latter operation the wound surfaces could be drained into the vagina after suture of the incisions into the peritoneum, which should even lessen the risk of peritonitis. On this account the speaker feared that the mortality of the operation for cancer of the bladder, suggested by Dr. Berg, especially in the male, would be excessively high.

Dr. A. A. Berg said that the operation of removing the glands that were situated along the iliac arteries in cases of cancer of the bladder was to be advocated; if one removed the cancerous tissues and left the glands one would do but little good. One would not think to-day of removing a cancerous breast and leaving the axillary and other glands. He said that there was no method by which we could remove these glands except by the intraperitoneal route. The operation was a difficult one and should never be undertaken before both ureters had been catheterized; this helped to distinguish them in the mass of cancerous tissue. Regarding the danger of infecting the peritoneum he did not think the increased danger could compare with the risks of leaving behind in the pelvis infected cancerous tissues. The peritoneum was opened and protected by tampons and he believed that, if done carefully, there was no great danger of infecting the peritoneum. In both his patients there were no signs even of irritation. Another advantage of this operation was that where the ureter was to be resected the implantation was easy and the drainage was from below through the peritoneum or vagina. He believed the dangers of infecting the peritoneum had been much overdrawn.

A Case of Funiculitis Following Urethritis.—This was presented by Dr. James Pedersen. The patient, twenty-nine years of age, has had four attacks of urethritis within twelve years, but gives no history of severe posterior urethritis. He came under observation at the clinic the latter part of August, 1903, presenting a scanty discharge. Under hand injections of argyrol he did well, and at the end of four weeks an astringent injection was substituted. At this time pain in the groins developed, and has continued. Shortly thereafter both urines became cloudy, and about a month later the discharge reappeared. The treatment during this interval was tonics and balsams; no injections were used. Argyrol was then resumed. Three weeks later right epididymitis developed. It began to abate after three days in bed. A week later, after hard work and a slight traumatism, epididymitis in the opposite testicle developed. All local treatment was stopped, creosote and cod-liver oil were ordered and he was sent home to bed. After he had been in bed three weeks the present swelling appeared in the left groin. At the end of a month he reappeared at the clinic, having spent in all seven weeks in bed. No instrumentation had been employed at any time. About three weeks ago on three occasions, after straining at stool, the urine was very slightly blood-tinged. There is no family nor previous personal history of tuberculosis. Under expectant treatment (cod-liver oil and creosote) the swelling has slightly diminished. The moderate purulent urethral discharge contains gonococci. One examination for tubercle bacilli has been made; the result was negative. The prostate is about normal in size, firm and its lateral borders are infiltrated. There is a marked cord-like infiltration in the region of the left seminal vesicle and ampulla; trifling infiltration at the corresponding point on the right side. Anything more than very gentle massage of this region causes blood to appear in the urine. Since last summer the patient has been very hoarse. At that time he had what was said to be a severe bronchitis. He gives a history of having worked for a year in a dusty room amid generally unsanitary surroundings. Dr. T. J. Harris, who kindly made a laryngoscopic examination, reports a small papiloma attached subglottically to the left vocal cord, which may be innocent but is probably tuberculous because of dulness and high prolonged expiration at the right apex, together with subnormal temperature.

Papillomata of the Bladder Removed by Suprapubic Cystotomy.—Dr. H. H. Morton presented this specimen which was removed from a man, forty-two years old, who had always been well up to five years ago, when he got wet and then found the beginning of his present trouble. There was pain in the back and frequent urination, with a little hematuria. The symptoms soon changed and, during the last two and a half years, he complained of frequent urination, every hour by day and three or four times by night. There was sudden stoppage of the stream while in full flow and this always caused him severe pain in the bladder. Blood was passed freely, usually for two or three days, and then ceased. One week ago he passed four fleshy masses without pain. On August 11, 1903, examination showed eight ounces residual urine. No stone was present. It was impossible to use the cystoscope because of the hematuria. Papillomata of the bladder was suspected, and a suprapubic cystotomy was performed and the specimen presented was removed. The wound healed after a very protracted and slow period of convalescence. The patient was discharged cured.

Dr. John Van der Poel asked Dr. Morton if he effected the removal of the growth with the knife or with the Paquelin.

Dr. Morton replied that he was prepared to use the Thompson bladder forceps, but he found that it was easier to remove the growths by means of the fingers, twisting them off.

Dr. R. Bolton Bangs said that one of the most interesting questions in such cases was that of recurrence and what steps should be taken in treating the base of the growth to prevent this. In those cases he had operated on, without absolutely resecting the bladder wall, he had removed the growths as thoroughly as he possibly could and then freely cauterized the bases and yet, in two cases in which he subsequently reopened the bladder on a return of symptoms, there were recurrences at the former locations. One case recurred within two years and the other the interval he did not remember. To him this question was most interesting.

Dr. Van der Poel said that one would be less likely to have recurrences if the Paquelin was used. In two cases in which the Paquelin was used there had been no recurrence in two years in one case, and in one year in the other.

Dr. H. H. Morton said the use of the Paquelin was valuable in many cases, but the free bleeding which accompanied the removal of the growths made it

very difficult to use. The blood concealed the surfaces which should be burned and it was impossible to sponge fast enough to get a clear view. Unless the surgeon saw distinctly the tissues which he was cauterizing he might destroy important structure such as the ureteral mouths or openings of the urethra.

Treatment of Tuberculosis of the Testicle.—Dr. J. B. Bissell read this paper. Will be found in full on Page 111 of this issue of Medical News.

Dr. F. Tilden Brown said he took no exception to the methods of treatment advocated because he was in accord with the views expressed. The fact that the seminal vesicles and the upper part of the vas deferens were so commonly involved in these cases of tuberculous epididymitis with but a slight invasion of the lower part of the vas made him question the direction the infection traveled. The consensus of opinion to-day seemed to be in favor of the original focus being in the lower part of the tract although those who had expressed different views in their writings during the previous decade still clung to them. He asked the reader of the paper if he understood him to say that Dr. Murphy expressed the opinion that the original primary tuberculosis of the epididymis or testis was apart from any intrathoracic or gastrointestinal lesion? If so, he must take exception to it. There was one symptom of interest which struck him as particularly notewothy, and well illustrated in the case he had shown to-night, where the bladder, kidneys and urethral tract were not involved yet pus would sometimes appear in the urine or there might be a hematuria and the first and most natural inference would be that they came from the bladder or urinary tract. They might, however, have their source in a seminal vesical or ampulla of the vas, and in some such cases this symptom would disappear after operation upon the lower genital organs. Some authors have ascribed a bladder origin to such hematuria and considered it sympathetic only and not necessitating any tuberculous lesion. Dr. Brown had not personally seen any such case.

Dr. John Van der Poel spoke of the interesting point which was first brought forth by Dr. Young, of Baltimore, treating the vas deferens by anchoring it in the upper part of the wound. Three or four years ago he had an interesting case which gave the usual history of injury to the testis and, upon examination, a sinus was found leading to what was supposed to be at the time tuberculosis of the epididymis connected with tuberculosis of the prostate gland. No bacilli could be found in the secretions from the testis through the sinus, but the diagnosis was made after massage of the gland and then examining the discharge from the urethra which showed the bacilli. In this instance he did an epididymectomy and the vas deferens was anchored in the upper angle of the wound in the groin. The case did not do well. Upon microscopical examination the pathologist gave it as his opinion that the condition was tuberculous, although a previous examination had revealed no tubercle bacilli. Of course he was apprehensive as to the result and would not have done anything had he known that the epididymis and testis had become acutely involved. The patient, however, insisted upon a thorough operation and it was only upon his insistence that he would consent to do it. He then did a complete double castration. The wound upon the left side continued to drain for months and finally closed. The tuberculous nodules upon one side of the prostate, which were quite small, disappeared. One would hardly have believed it to be a tuberculous prostate upon ordinary examination. He said that tuberculosis presented so many phases that the short time at his disposal made it difficult to discuss them under one heading. All knew that a large number of tuberculous patients did extremely well when placed upon proper general hygienic treatment, *i.e.*, tuberculosis of the genitourinary tract as well as of the pulmonary organs. It was well known that operations for the removal of a local tuberculosis did not always give good results because there was apt to be a return of the disease. In the majority of cases the results are such that we should not perform an epididymectomy, or a castration, where the prostate or seminal vesicles or bladder were involved.

Dr. James Pedersen referred to a case of primary tuberculosis of the epididymis which he had seen in consultation. The nodule was very small; there were no evidences of tuberculosis in the lungs nor in the prostate and seminal vesicles; the diagnosis was made by exclusion. The patient being a man of means and able to give himself every advantage, hygienic measures were advised for the immediate present. Two weeks later the patient consulted one of the best and most conservative general surgeons in the city, who advised immediate removal of the testicle and epididymis, and performed the operation. The case goes to prove the diversity of opinions as to the proper treatment of this condition.

NEW YORK NEUROLOGICAL SOCIETY.

Regular Meeting held April 5, 1904.

The President, Pearce Bailey, M.D., in the Chair.

A Case of Myasthenia Gravis.—Dr. L. Pierce Clark presented his case, which, in many respects, was typical and not of particular interest except that the diagnosis was made upon the myasthenic reaction and exhaustibility of the muscles of the shoulder and pelvic girdle. The rapid exhaustibility of the muscles was more marked upon the left side. The paresis that was present was very persistent and there was a remarkable variability regarding the intensity of the symptoms. The patient's expression was sleepy and there was some ptosis. The patient had been bedridden for three months and, up to two weeks ago, the condition had grown progressively worse. Then she was given thyroid and, two days later, the parents noticed a great improvement. She even then could walk down stairs and go about some. She had the gluteal walk. In addition to the thyroid she was given thymus gland, but it had not been given long enough to make a report as to its effect in this case. She also had the condition known as "dead finger." Certain of her fingers were in this typical state and was brought about by cold, exhaustion and depressing emotion. Two months ago she developed facial edema, especially marked in the lips, and which looked as if some insect had stung her; this interfered with her speech, but that slowly passed away with her other symptoms. There was also tongue atrophy which was rather atypical. Among the striking features were periodic attacks of diarrhea, which were not due to causes other than increased peristalsis. The most marked exhaustibility was in the deltoid and trapezius muscles. The voice showed the peculiar nasal tone of the exhaustibility in these cases. The quadriceps extensor was but little involved. She has had "dropping

spells" in the streets. There was some difficulty in swallowing in the past, but now was much improved. There was a weakened hand-grasp on both sides. The galvanic and faradic currents do not get good responses in these cases.

Dr. Graeme M. Hammond asked if an examination had been made of the muscular tissue.

Dr. Clark answered that the patient objected so to such an examination that it had not been made, but he thought that in time he would get her to consent. The blood examination had not yet been made. He said that Dr. Henry Hun, of Albany, had suggested that there might be some irritation about the thymus gland which stirred it up into activity, giving rise to this condition. Dr. Clark did not think this was so because the thymus had been found to be normal in so many of these instances.

Tuberculous Meningitis.—Tubercle of Inferior Olive.—Dr. L. Pierce Clark presented this specimen, which was removed from a patient fourteen years old who had been referred to him by Dr. F. M. Cook on February 28, 1904. Headaches had existed for the past four months, the girl was staggering for the past three weeks and vomiting had occurred on rising in the morning. The family history was negative aside from the father's dying from chronic alcoholism. The boy was bright, intelligent, and well developed for his age; he appeared dull at the examination. The cranial nerves showed an unequal and irregular weakening in the following nerves of the right side, seventh, eighth, ninth, tenth and twelfth. Dr. Holden made an eye examination and reported the disks normal. There was bilateral ataxia in all movements of the upper and lower extremities. He walked a little to the right. The gait was markedly cerebellar, knee-jerks were bilaterally exaggerated, true ankle-clonus was present at times, but there was absolutely no Babinski at any examination. Big toe flexion was, however, slower on the left side. On March 1 the patient became delirious, would eat nothing and showed the first signs of a marked rise in body temperature. There was slight persistent pain over the right mastoid. The patient was referred to Roosevelt Hospital. During the next week he had a continuous temperature ranging between 101° and 102.5° F. and for the most part he was in a semi-delirious condition day and night, suggestive of basilar meningitis. The blood count showed no leucocytosis, and two lumbar punctures were completely sterile. The diagnosis of solitary tubercle in the lower right half of the fourth ventricle and a more or less diffuse basilar meningitis was held as the most tenable pathological lesion to explain the symptoms. As a last resort an operation in two stages was advised to relieve pressure and possibly later to remove a portion of the tumor. The first step was performed by Dr. Brewer in nine minutes. The patient stood the operation well, but died the following day.

The report of the brain tumor found at autopsy was as follows: There was marked opacity of the pia at the base, most pronounced in the region of the Sylvian fissure, the anterior and posterior perforated spaces and the crura. The opacity was composed of minute whitish pin-points scattered unevenly and most numerous in the areas indicated. In the position of the right inferior olive there was a mass about the size of a small hickory-nut. Its contour was not perfectly regular, generally oval, consistence markedly increased, and it was ultimately blended with the surrounding nervous tissue.

Dr. Pearce Bailey asked if a section had been made of the tumor.

Dr. Clark replied that he had tried to keep the tumor in its external appearance and, therefore, no sections had been made of it.

Case of Brachial Birth Palsy.—Dr. A. S. Taylor presented this patient. The boy was born after a dry labor, with instruments and after a great deal of traction had been made. The child was born greatly asphyxiated and it took some time for his recovery. After that it was found that he had paralysis of the right arm. During the first few months of life there was no improvement in the condition, but, during the next one or two years, there was a slight improvement in the muscles of the right upper extremity. There was a cessation in the improvement from two or three years ago and, from the time he say him, about ten months ago, the condition was as follows: There was a marked internal rotation and contracture at the wrist. The deltoid showed paralysis and considerable atrophy with displacement downward of the head of the humerus perhaps one-half to one inch. He said the muscular changes and the reaction would be referred to by Dr. Clark in his paper. In the paralyzed muscles there was the reaction of degeneration and a great deal of atrophy of them. There was a marked lack of development between the bones of the two sides. There was 2½ cm. difference between the clavicles and there was also a difference in the length of the humerus and bones of the forearms. Operation was performed nine months ago. A very interesting thing was noted in this instance. The anterior nerve division derived from the junction of the fifth and sixth cervical roots was torn away and displaced downward 2.5 cm., and was adherent to the front of the scalenus antisus by firm fibrous adhesions. The nerve was dissected free and its damaged ends removed. The junction of the fifth and sixth nerves and the posterior division derived from them was the seat of cicatricial enlargement and induration. The damaged tissue was excised, the freshened ends satured, Cargyle membrane wrapped about the junction and the wound closed as usual. The patient was placed in a dressing which approximated the shoulders and neck and this attitude was maintained for three weeks. Then the dressing was removed and the patient was allowed freedom of his extremity and was encouraged to move it as much as possible. From then on, under the supervision of Dr. Clark, he had received electricity and other treatment to develop the general condition of his muscles and made to use his muscles himself. For three months there had been more or less complete paralysis in all muscles supplied by the fifth and sixth cervical nerve roots. Now there is absolute return of nerve function. Before operation the hand had alays been held in a markedly contracted position and there had been ulnar deflection. The return in the musculo-spiral nerve function was most slow. The posterior dislocation of the humerus was very marked two months ago and there was still a spontaneous rotation and reduction now going on. The patient had not yet much rotatory power.

A Case of Obstetrical Palsy.—Dr. Royal Whitman showed the case of a little girl, nine years old, who had a posterior rotation and displacement of the humerus. She was first seen last summer after she had been going for three months to various clinics. The humerus was rotated backward and there was anchylosis at the shoulder-joint. The treatment adopted formed the subject of his paper, *q.v.* The first treatment consisted in efforts at replacement of the displaced bone. One extremity was much smaller than the other as also was the size of the

scapula. He showed the Section the amount of power that had been acquired in the deltoid. Supination was quite marked, but there was a limitation of flexion which was quite marked after the arm had been replaced. The patient was still under treatment, and Dr. Whitman demonstrated the method of overdistention, outward rotation, extension of forearm, supination, etc. It was in fact a demonstration of forcible manipulation which was absolutely necessary in the treatment of these patients. The improvement in this patient had been very marked and he believed that eventually there would be recovery. He said that reposition of a dislocated shoulder would not cure the nerve lesion, but would make it possible.

A Case of Obstetrical Paralysis.—Dr. Royal Whitman also presented this patient, a woman. The arm of one side was about three and a third inches shorter than the other. A diagram he presented showed the condition seen last summer. The patient now wore an apparatus during the day which kept the fingers in extension. There was great improvement in the condition of the fingers. This was an extreme case of obstetrical paralysis.

A Case of Obstetrical Palsy.—Dr. Royal Whitman also presented this patient, which was even more serious than the others. The original paralysis was on both sides in the arms. There was a great difference between the two extremities. Until two months ago the patient could use only one hand to dress herself, under appropriate treatment there was noted an improvement.

A Case of Obstetrical Paralysis.—Dr. Royal Whitman presented this patient which illustrated a form of posterior luxation and resistance to outward rotation. He said that if one expected to get good recovery from the employment of manipulation one must first overcome this resistance to normal motion.

Brachial Birth-Palsy and Its Surgical Treatment.—Drs. L. Pierce Clark and A. S. Taylor presented this communication, which was in the nature of an abstract and was intended only to cover the *principal* facts brought out in a study of brachial birth-palsy. A detailed account of the data would be published in full at a later date. While the clinical diagnosis was quite clear, its etiology was still mooted, although it was almost universally believed to be due to tension or compression of the fifth and sixth cervical roots. Tension probably played much the greater rôle in the causation although both factors had been proven causative agents both in clinical and experimental work. As a rule there was given a history of force having been applied during the birth of the child. In some various abnormal presentation had been present. In all the cases that had come to their knowledge there had been either a history of traction, or else this factor could not be excluded. The one and constant factor in its production, in their opinion, was traction, produced by forcible depression of the shoulder while the head was bent to the opposite side and rotated; in this way the cervical nerve roots were overstretched, causing rupture of the nerve fibers over a considerable length of the nerve, or in some cases complete rupture of the nerve. The lesion was always in the fifth and sixth nerve roots, frequently also in the seventh and occasionally in the eighth and first dorsal. From a brief review of the clinical picture of brachial birth-palsy, its etiology and pathology they said that one was impressed with the inadequacy of the present medical treatment. Surgical intervention naturally suggested itself, such as had been done in peripheral nerve injuries in general. Few secondary operations had been done upon the brachial plexus. During the past year they had operated upon four cases of brachial birth-palsy. Details of the operation were given by Dr. Taylor in his discussion. A relation of the four cases here followed. Fatal results occurred in the first and fourth cases and this brought forth the question of the degree of shock involved in the division of large nerve trunks near their spinal origin. In the first case the length of the operation, and the fairly large loss of blood incident to it, obscured the problem. In the fourth case the operation was much shorter, the loss of blood slight, and the damage to the nerve much less. Still the result was practically the same, though not so rapid. The time consumed in all four operations was unquestionably too long, but this was due to (1) unexpected conditions demanding careful dissections; (2) the delicate manipulation necessary to the handling of nerve tissue; (3) lack of skilled assistance. The following conclusions were presented:

1. The most important etiological factor in the production of brachial birth-palsy was direct or indirect tension of the nerve trunks which cause rupture of nerve fibers.

2. An explanation of the persistence of the palsy was clearly based upon the pathological findings which consisted of a destruction of the axis cylinder by rupture of the nerve fibers and formation of an overgrowth of connective tissue between the torn nerve ends through which the nerve fibers cannot regenerate.

3. The nature of the lesion in all typical severe cases demanded excision of the damaged nerves and suture of the good ends at the earliest possible moment, as in the treatment of peripheral nerve injuries elsewhere.

4. From the surgical viewpoint the desirable time for this interference was not yet determined. It would, however, seem to be much later than two or three months after birth, as Kennedy advised.

5. The present medical treatment consisting of an application of massage, electricity and systematized muscle movements should follow the surgical interference.

6. The prevention of this serious lesion of the brachial plexus rested with the obstetrician who should not stretch the child's neck in the process of delivery.

Remarks on the Surgical Treatment of Obstetrical Palsy.—Dr. Royal Whitman read this paper (see preceding page).

Dr. Alfred S. Taylor opened the discussion by stating that the question of prophylaxis was the most important in the consideration of this subject and, in order to have an intelligent grasp on the prophylaxis one should know more regarding the etiology of the conditions met with. The books state that pressure upon the clavicle during birth, hyperextension of the arm, pressure of the forceps, pressure of the fingers, etc., during birth will cause the condition. In the later literature it will be found that tension is the chief factor. If one could give an exact etiology one could make great advances in prophylaxis. For this purpose he had had the privilege of examining many newly-born infants to determine whether he could find an exact etiology. He experimented on eight children, using great force in pulling on the neck away from the brachial plexus and, no matter how hard he pulled, there always seemed to be present a pad of muscular and fatty tissue in which the nerves could sink and it seemed to him that any damage to the brachial plexus from

the application of such a force was only theoretical. He took stillborn children and placed them in attitudes assumed during the process of delivery; then pushing back the clavicle he could not get even enough pressure to cause any marked tension of the nerves. Placing the arm back of the child's head did not place the nerves on sufficient tension to cause any damage. While the arm was in that position, the forearm was firmly grasped and the fifth and sixth nerve then were sufficiently loose that they could be moved. Anything which depressed the shoulder and increased the distance between the shoulder and the neck caused greater tension of those nerves. In the living child one could place the finger between the anterior scalenus muscle and the nerves when they would feel like fiddle strings. This forcible depression of the shoulder first caused a tension of the fifth and sixth nerves and it was demonstrated that they would give way in the same position in which they were found in other cases upon which he had operated. First the fifth and sixth nerves would give way, then further pulling would cause a similar damage to the seventh nerve. It seemed to him his experiments proved distinctly that the etiology of this condition was purely that of tension and, therefore, the question of prophylaxis should be considered, and this consisted in exercising care *not* to pull the head away from the shoulder when the latter was fixed, or *not* to pull on the shoulder away from the head when that was fixed.

Erb's Palsy at Sloan.—The resident at Sloan reported six cases of Erb's palsy. In one, the presentation was a normal vertex, with delay after the head was born. With but slight pulling the shoulders were delivered and following this there was a double paralysis of the arms which soon disappeared. It was of the Erb type. In another case of Erb's palsy the hand had been placed under the neck and, after delivery of the head, had pried upon it, so producing the condition. In the other four cases, they were all breech presentations. He said that one could readily see that if the forceps were applied to the head and force exerted when the shoulders were fixed, one would produce exactly the same condition of affairs as was noted in his experiments. Again, in breech presentations, if one pulled upon the legs before the arms were delivered, there would be no traumatism to the brachial plexus; but when the arms were delivered, if the fingers were placed over the shoulders and traction made upon them, when tension would be brought to bear upon the plexus. In hooking the fingers over the shoulders the tips of them rest upon the nerve cords themselves and, if any tension was produced, it would be a greater tension and a greater lesion would be produced than if force had been applied without the finger tips over the nerve cords. He believed that this was the reason so many more cases occurred in breech than in vertex presentations. Again, it was a question with him whether the bringing of the child's body over upon the abdomen of the mother, so producing extension of the neck, would not produce the lesion. He had experimented upon this and found that the nerves were not made very tense, certainly not enough to cause them such injuries. He said that a considerable degree of force was necessary to produce rupture of these nerves. He emphasized the fact, that in the delivery of every child, one should use a reasonable amount of caution to prevent these birth palsies. Another interesting feature noticed when operating was that not only was the nerve trunk itself damaged, but also the deep cervical fascia, and this fascia was found to be adherent to the nerve trunks. He said that only recently he had seen a patient at the Vanderbilt Clinic which showed the same manner of traumatism and the same results as those that had been reported. Frequently one saw instances of men who had fallen from a height and struck upon the head and shoulders and the resulting paralysis could be likened to that occurring in birth palsies, with the paralysis and atrophy of certain muscles. Pressure upon the branches of the fifth and sixth nerves revealed, in such instances, a marked degree of tenderness. It was the stretching of these nerves that caused the lesion. He said it was worthy of comment in the operation proposed to refer to the importance of the suprascapular nerve. In his first two operations he did not appreciate the value of this nerve in the ultimate results. It was rather small in children, but it controlled largely external rotation of the humerus and, therefore, one should use caution not to get it in line with the nerve sutures. It seemed to him that from the findings which were shown in the microphotographs, one could scarcely feel that a case of well-marked Erb's palsy could be cured without exsection of the nerve and suturing of it. Dr. Whitman's paper, he said, treated of the reduction of the deformity before other measures were applied to the nerves for their regeneration. He said a reposition of the dislocated shoulder could not bring the muscular tissue into action if such tissue was not innervated.

Dr. B. Sachs said the subject was a most interesting one, as well as a very serious one and that it was very necessary that one should have a clear understanding of many of the points raised. It should first be clearly understood that not all obstetrical palsies were cases of Erb's palsy, because, he believed, there were many obstetrical palsies that had nothing to do with the fifth and sixth cervical nerves; there were many instances in which traction upon the arm produced luxations and subluxations, and the pressure of the head of the humerus was at a point lower down than the fifth and sixth nerves. Therefore, he thought, one should be careful in claiming that this method of operating was going to be a panacea, or one method of cure, for obstetrical palsies. He said there was a natural mode of recovery in obstetrical palsies, even in those cases which appeared to be extremely severe from the time of birth. It was very important to watch these cases from the earliest times. He had been in a position to see obstetrical palsies from the day of birth, and had been able to follow them for years afterward; he had had several children under observation. What he wished especially to impress upon them was that if they examined many cases soon after birth they might find a distinct subluxation of the head of the humerus probably below the deltoid which might possibly be identified with Erb's palsy; therefore, all cases of obstetrical palsies were not Erb's palsies. In one of his own cases a great deal had been accomplished by careful treatment by the early application of electricity, which was really another valuable form of gymnastics, and the intelligent use of massage. That so many of the cases did so well, reduced the question, he thought, to what would be the proper time for operation, and this seemed to him to be a very serious matter for their consideration. If one operated early there was then a tremendous amount of shock. Could one expect more from operation than from the inherent recuperative powers of the nerves and muscles themselves? He believed that if there was muscular atrophy and a great deal of wasting, especially about the shoulder, no amount of suturing of nerves, or transplantation

of their divided ends, would bring about thoroughly satisfactory results. In one of the cases presented he could not satisfy himself that there was the least deltoid action; the child exhibited nothing akin to deltoid action. He said he did not wish to discourage the operation in the least because he was ready to believe that, in carefully selected cases, they might be benefited by operation. But, he said he was much puzzled regarding the proper time for operating. When should this treatment be undertaken? that was the question. The remarks of Dr. Whitman, he thought, were quite *apropos* and entirely correct. Much of the trouble was due to secondary changes in the muscles and ligaments about the joint, and this must be overcome before anything much could be expected from the surgical interference. He believed the operation was a dangerous one; aside from the hemorrhage and its consequent shock one should bear in mind the proximity of the cervical portion of the spinal cord which adds to the danger. He hoped that the operation would prove beneficial, but because many cases did well without operation he was reluctant to resort to this surgical procedure at present when it was attended with such dangers.

Early Operations.—Dr. Carmalt spoke of patients that had been operated on before the fourth week of life. In one the fifth and sixth nerve roots were torn from the spinal cord and nothing could be done and the child died one month later. At autopsy it was demonstrated that the fifth and sixth nerve roots were torn from the cord itself; they were shredded out. The traumatism at the time of operation did not seem to be very great. In the second patient the point of division was not at the point referred to by Dr. Taylor. It was only when these nerves were under some tension that they were liable to rupture. A little over 60 pounds pressure was found to be necessary to break the nerve and he said that few obstetricians used that amount of power. At the hospital it had been demonstrated that one case required 60 pounds and four others required between 80 and 100 pounds pressure before rupture occurred. In the third patient rupture of the nerve took place and was a transverse rupture. It was easily sutured and the child did well for six months, but died of an enteritis. Operation was done during the third week of life. The child had apparently recovered the use of the arm, but whether the nerve would ever have fully regenerated was a disputed point. The fourth patient died of sepsis, five days after operation. He did not think the question of shock in the older cases was of such importance as in early life. One manipulated the spinal cord in spina bifida, where the trunks were larger than the fifth and sixth cervicles, and the amount of traumatism was as great, if not greater, and yet no apparent shock resulted. Hemorrhage should not influence the shock greatly because it could be so readily controlled. He thought that the time to operate in these cases of birth palsies would be somewhere between the fourth and fifth month and not so late as the second or third year.

Dr. Terriberry believed that any contribution to this subject would be greatly welcomed. So far the reports of operations for birth palsies showed it to he a very serious performance. He said that undoubtedly there were many cases which were not the result of stretching and he had in mind a case in which the end of the forceps impinged upon the fifth and sixth cervical roots, a very unusual thing. This case rapidly and completely recovered. This was a case of simple traumatism. He had had under observation a case of double palsy of the Erb type which followed a breech presentation and it was not in any way produced by traction. The trouble here was due to pressure upon the cervical roots. This child rapidly improved and both arms became about equal. The question raised by Dr. Sachs he thought a very important one. Everybody knew that these cases, if they improve, will improve slowly for a great length of time. The manipulations brought out by Dr. Whitman he believed to be a great aid in the cure of these patients. He believed the whole question resolved itself into the making of a correct diagnosis as to the cause. A number of cases were undoubtedly due to pressure, traumatism being applied low down on the plexus. To operate upon such cases he believed would be unwise. If by any possible means one could determine that the nerves were torn then the sooner the operation was done the better.

Dr. William M. Leszynsky said that considering the inherent power of the peripheral nerves to undergo regeneration, and in view of the fact that this was a dangerous procedure, he believed it would be wiser to wait for some time, keeping the arm in proper position, before one should resort to such a dangerous procedure. He said he would hesitate very much before he had any of his patients submitted to operation, at any rate early in life.

Dr. B. Sachs said he did not think any one had a moral right to operate upon these children before several months had been allowed for their cure by other than operative means, because the operation was a dangerous one and a chance should be given to the child to recover by natural means.

Time Best Suited for Operation and Technic.—Dr. George E. Brewer thought that enough pathological material had been presented to enable the profession, in a certain number of cases, to say positively that a rupture of the nerve or nerves had occurred and, in those cases which presented the Erb type, it was obvious that no perfect result could be obtained unless some reestablishment of the nerve trunks was made. The question as to the gravity of the operation, he believed, should not be considered at the present time, when only a few operations had been undertaken. He referred to the history of gall-bladder operations, or appendicitis operations, etc., of their early failures and early high mortalities; yet when the technic was improved and they had more experience with such cases, the mortality was greatly reduced, from 50 and 60 per cent. down as low as two per cent. Therefore, he did not think it right, in view of the few operations reported, to say that this operation was a particularly dangerous one. In one of Dr. Taylor's cases there was hyperpyrexia, the temperature going to 106°, 107° and 108° F. and this, in the presence of a sterile wound, he considered rather unusual. It resembled the temperature following thyroid operations. He said that unquestionably the operation could be performed with a much lower mortality when they had improved their technic, for children, as a rule, bore operations well. He said that Crile had demonstrated that by cocainizing the nerve trunks shock could be diminished tenfold. He had no doubt but that better results could be obtained after more operations had been done.

Regarding the time for operation in these cases he said that all who had seen nerve division and suture recognized the fact that the best results were obtained operating soon after the injury took place as possible. The sooner the better. Therefore, if surgical procedures were to be carried out they must be done

relatively early. He believed that complete atrophy of the muscular fibers precluded the possibility of operation.

Dr. Wisner M. Townsend said that the causes of death in these cases might be due to various unknown causes which may be eliminated in the future. There might be something in the method of operating which would reduce this high mortality if eliminated. If it could be determined that rupture of the nerve had actually occurred then he thought combining the method suggested by Dr. Terriberry and that of Dr. Whitman would be very advantageous.

Dr. Pearce Bailey said that it seemed to him that the question gathered itself up into the matter of the time of operation. Those cases that were operated upon early seemed to do well, but when they were operated upon late, he questioned if anything was to be gained. A paralysis that had existed two years or more did not offer much hope from operation. The fact should be borne in mind that very frequently the case is beyond the scope of operation. Statistics show that when the nerve roots are severed from the spinal cord there is nothing to be hoped for from operation. Many cases recover late and often one might operate upon a case that would have recovered without operation. He said that upon these two points the question hinged and more cases should be reported before anything definite could be decided.

Dr. Thomas P. Prout said that if the nerves were involved in foreign tissue it was impossible to repair the condition except by surgical means. There certainly was a certain number of cases that should be turned over to the surgeon.

Dr. L. Pierce Clark, in speaking of the various types of palsies, said that often one could disclose the particular type by palpation; also by noting the muscles paralyzed, the atrophy, the deformed arm, etc., all would give definite information where the lesion lay. With regard to spontaneous recovery occurring he said that everybody took advantage of that after a certain length of time. After two or three years, when atrophy had occurred and the muscles had undergone marked contractures, deformity was produced. The exact time that operation should be performed in these cases he could not say. But there was one thing certain that they did not intend to do the operation under one year of age. He said he was glad to hear what Dr. Whitman had stated regarding replacing the humerus and overcoming the contractures and he hoped such information would enable them to bring out better results in the future. He thought that overcoming these old contractures and replacing the head of the humerus was a necessary adjunct.

Dr. A. S. Taylor closed the discussion by stating that if he had known the exact condition of the first child operated upon the child would be living to-day. The operation was a prolonged one and there was much hemorrhage. The question of hemorrhage should always be considered in the operative treatment in these cases. The second patient that died was in a very bad condition and had been in the hospital for months with recurring attacks of dysentery. The dysentery following the operation materially hastened the child's death so they could not blame the operation for the death in that instance. In selected cases he did not consider the operation a very dangerous one, as it seemed to be from the statistics. The question of hemorrhage could be readily disposed of because there was really but two small blood vessels that were cut.

Dr. Abrahamson, in speaking of the cause of death in the two patients, said the relation of the cervical cord and the sympathetic system should be borne in mind. Hyperpyrexia and thyroidism could be explained by the connection between that part of the cord and the sympathetic system.

BOOK REVIEWS.

La Rhinoplastie. Par Ch. Nélaton et L. Ombrédanne. G. Steinheil, Editeur, Paris.

The subject of rhinoplasty has always been a most interesting department of plastic surgery, partly through the very wide scope for individual ingenuity the operation involves and partly through the early date at which many of the procedures were elaborated. Seductive as the technic of reproducing a missing nose has always been to surgeons, it must be admitted that the results are usually very mediocre and there is some justification for the frank brutality of a saying attributed to Dertonvilliers to the effect that in these cases the surgeon does but substitute for an infirmity that is disgusting one that is ridiculous.

In the present volume the subject is treated with the utmost attention to detail. The historical aspects of the different methods are entertainingly indicated and the steps of the operations advocated by scores of surgeons are very clearly given in nearly four hundred cuts. The inadequacy of attempts to replace complete defects merely with fleshy flaps is pointed out and in addition to many others, one most ingenious method is described in which a portion of the cartilage of the eighth rib is transplanted under the periosteum of the frontal bone and later is utilized in the frontal flap which forms the new nose.

Guy's Hospital Reports. Edited by J. H. Bryant, M.D., and F. J. Steward, M.S. Volume 77, being Volume 43 of the Third Series. J. and A. Churchill, London.

Guy's Hospital Reports always contain some very interesting material of clinical importance. The present volume opens with an article on disease of the heart due to overindulgence in alcoholic drinks, by Dr. W. Hale White, in which what is sometimes known as the Tübingen or München heart is especially discussed. This is a form of dilatation of the heart which has been found very commonly in these two cities, as also in other parts of Germany, in which the history of the patients shows that they have been free drinkers of malt liquors. The amount imbibed by some of the patients would seem almost impossible, except to such as have had experience with men working in breweries. Thirty-five liters or even more, that is to say, something over twenty quarts, are sometimes consumed in twenty-four hours. This form of heart disease has been found in other countries, since attention has been called to it in Germany.

Other interesting articles in the present volume are those on a contribution to the history of the intravenous injection of drugs, by Dr. J. M. Fortescue Brickdale; Eosinophelia in Skin Diseases, by Herbert French, and some cases illustrating the influence of Heredity in angioneurotic edema, by C. A. Ensor, in which a series of family cases of this affection is described.

BOOKS RECEIVED.

Utero-ovarian Artery. By Dr. Byron Robinson. 8vo. Illustrated. E. H. Colegrove, Chicago.

The Man Who Pleases and the Woman Who Charms. By John A. Cone. Third revised edition. 16mo, 131 pages. Hinds & Noble, New York.

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ORIGINAL ARTICLES.

SOME SURGICAL ASPECTS OF OBSTETRICS.[1]

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Two articles in the *New York and Philadelphia Medical Journal,* one by Dr. R. L. Dickinson, entitled, "The Best Time for Repair of Lacerations of the Cervix," the other by Dr. G. H. Donohue, on "Primary Trachelorrhaphy," contain some excellent observations, particularly that of Dr. Donohue, as to the effects of cervical laceration upon uterine involution. So far as they emphasize the importance of early surgical treatment of parturient injuries they are of great value, but in setting as a definite time for such treatment only the few days immediately following labor, certain surgical principles are overlooked, for the best application of which a wider interpretation of the facts is necessary.

The constant occurrence of cervical lacerations, even in apparently normal labors, is, of course, well known, although on account of our present aseptic technic they are less constantly of clinical importance than heretofore. The less frequent appearance during the past few years of the extremely indurated and eroded cervix is a fact noted by so experienced an observer as Dr. T. A. Emmet.

Injuries to the cervix, however, of such severe character as to cause immediate and subsequent symptoms are of very constant occurrence under the following circumstances: (1) Premature rupture of the membranes. (2) Application of the forceps and all operations requiring rapid dilatation of the cervix. (3) Meddlesome attempts to hasten the dilatation manually in normal cases.

1. *Premature Rupture of the Membranes.*—The cervix is always torn more in cases of dry labor, and in such cases it is the duty of the attendant to see how much of an injury has resulted.

2. *Application of the Forceps and Other Obstetrical Operations.*—The forceps is applied in a very large number of cases before dilatation is completed. A common expression that the rim of the cervix can be felt, but that it is soft and dilatable, means that the cervix will be deeply lacerated. After versions and in all cases where the cervix must be dilated rapidly the same injuries constantly result without regard to the operator. Manual dilatation is a misnomer; manual tearing is a more correct expression of the actual result.

3. *Meddlesome Attempts to Hasten the Dilatation of a Cervix,* perhaps already thin and soft, frequently transforms it into a thick and resistant circle which not only delays the labor but makes a deep laceration certain to occur.

Preventive treatment must be based upon an appreciation of these facts. Treatment of the injuries after their occurrence should be regarded from the same points of view as wounds in any other portion of the body, namely—hemorrhage, sepsis, disturbance of functions and subsequent disease.

Hemorrhage from cervical wounds is generally considered as of comparatively rare occurrence, but the writer's own observations have taught him that hemorrhage from this source, after labor is completed, is more frequent than from any other portion of the genital tract. One need but hold the fundus of a well-contracted uterus in a dozen operative cases and closely observe the amount of bleeding to appreciate this fact. The bleeding from the torn cervix in placenta previa frequently precipitates a fatal result. The two common obstetric procedures—douches and iodoform gauze packing—are of little value. In fact, I believe the cervical wound is often kept open and the hemorrhage is worse than it otherwise would be. Dr. Dickinson gives as one of his reasons for not suturing the cervix at the end of delivery the obscuring of the operative field by the blood. The surgeon usually considers bleeding an important reason for closing a wound.

Sepsis.—It is generally recognized in surgery that one of the best ways of preventing infection of wounds is to suture them. The cervical wound is a very frequent source of infection as may be learned by a careful local examination of septic women. If not fatal, such an infection almost always results in the hard and eroded cervix as seen by the gynecologist.

Disturbance of function from these injuries is often shown by subsequent sterility and menstrual difficulties. Subsequent disease—subinvolution—metro-endomometritis, etc., are well known. If the uterus without the presence of fever involutes insufficiently during the puerperium it is due in a very large proportion of cases to a cervical injury to which injuries of the perineum are ordinarily second in importance.

Why, then, should such injuries not be treated surgically as often as are the perineal wounds?

Dr. Dickinson says "the conditions for repair of the torn cervix immediately after delivery are as wrong as they can be, because (1) it is swollen, distorted and stretched beyond recognition; (2) because bleeding obscures the work; (3) because deliberation and due care are impossible." He would limit such work to those cases in which

[1] Received for publication April 9, 1904.

the injury causes severe bleeding. The cervix, of course, is swollen, but to say that it is distorted and stretched beyond recognition expresses the condition in exceptional instances. He refers also to Webster for support to this statement, but Webster in his own description of a plate made from the uterus shortly after death simply expresses the difficulty of recognizing in his specimen the relations of the internal and external os. That, however, is not the same as looking at a cervix which has been pulled down to the vaginal entrance by volsellum forceps. Dr. Dickinson's third objection in regard to the impossibility of deliberation and due care at the termination of delivery hits at a fundamental error in obstetric practice. He says "of course, one prefers, personally, to clean up all the mess and have done when he has done at the end of labor." A carefully planned operation in gynecology would hardly be described as a "mess," and if the conduct of labor, especially if its course is abnormal and requires operative interference, were carried out on the same lines as other operations "messes" would be less frequent.

One of the commonest errors in obstetric technic is the attempt to do the impossible on a bed, and a more frequent resort to a hard table with more deliberation at the beginning of an obstetric operation will often determine its successful result. The cervix, then, as well as the perineum is best sutured at the completion of the delivery. No particular operation, device or instrument is necessary. It is simply a question of proper exposure of the wound by means of volsellum forceps, sponging, and two, three or four plain catgut stitches. That such wounds can be successfully sutured a day or two later only makes a greater demand upon the attendant, and fortunately allows him time, if necessary, to procure sufficient aid for a successful operation. If a longer delay is necessary they can be treated in a few days, weeks, or even months, but the sooner the better.

The writer, from his own experience, is thoroughly impressed with the excellent results to be obtained from the early treatment of these injuries compared with those usually obtained months and years afterward, when connective tissue changes of more or less permanent nature have occurred. As asepsis in delivery has reduced the morbidity and mortality of the puerperium, so surgery, displacing the hot douche and gauze packing in the puerperium, will still further decrease the number of chronic pelvic diseases.

1736 Broadway.

Annali dell' Instituto Maragliano.—This is the title of a new periodical, just received, to be devoted entirely to the study of tuberculosis and to set forth the results obtained by Maragliano and his pupils in the recently established institute founded for such work at Genoa.

MYELOGENOUS LEUCEMIA WITH DISAPPEARANCE OF THE SPLENOMEGALY AND THE MYELOCYTES.[1][2]

BY CHARLES E. SIMON, M.D.,
AND
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Cases of myelogenous leucemia, in which, together with an improvement in the patient's general condition, there is a disappearance of the splenic tumor and at the same time of the myelocytes, are apparently very rare. The only instances recorded in the literature, so far as we have been able to ascertain, are those of McCrae, Senn, Plehn and possibly also one of Kohn.

McCrae's patient was a man, twenty-eight years old in whom symptoms attributable to a leucemia were first observed in the latter part of 1897. The following June the spleen was found to be much enlarged, coming within 2½ inches of the umbilicus. Blood examination at that time showed 45 per cent. of Hb., 2,680,000 red cells and 584,000 leucocytes; of the latter 0.3 per cent. were small mononuclears, 0.6 per cent. large mononuclears and transition forms, 72.0 per cent. polynuclear neutrophiles; 3.0 per cent. eosinophiles and 23.0 per cent. myelocytes. During the count of 600 cells six normoblasts were seen.

The patient was placed on arsenic and general hygienic treatment. The following September the spleen could just be felt on deep inspiration. Blood examination then showed 68 per cent. of Hb. and 4,640,000 red cells, while the leucocytes only numbered 9,250; of these 10 per cent. were small mononuclears, four per cent. large mononuclears and transition forms, 84 per cent. polynuclear neutrophiles and two per cent. eosinophiles. Myelocytes and nucleated red cells were not found.

In November the spleen could be palpated 2.5 cm. below the costal margin. The percentage of Hb. was 67; the red corpuscles numbered 4,160,000, and the leucocytes had risen to 178,000. A relative count showed 2 per cent. of mononuclear leucocytes, 67 per cent. of polynuclear neutrophiles, 9 per cent. doubtful forms (classed by McCrae with the polynuclears), 1 per cent. each of eosinophiles and mast cells, and 20 per cent. of myelocytes. Nucleated red cells had again appeared; 12 normoblasts and 6 intermediate forms between normoblasts and megaloblasts were encountered during a count of 1,000 cells.

By December the spleen had again diminished in size; on the tenth it was found just palpable on deep inspiration. The leucocytes had fallen to 98,000, of which only 8 per cent. were myelocytes. The following April the spleen could not be felt even on the deepest inspiration. The Hb. was 70 per cent.; the red corpuscles numbered 5,328,000 and the leucocytes 5,000. A differential count showed 13 per cent. of small mononuclears;

[1] Presented before the Johns Hopkins Hospital Medical Society February 1, 1904.

[2] Received for publication March 21, 1904.

16 per cent. of large mononuclears; 66 per cent. of polynuclear neutrophiles and 2.0 per cent. of eosinophiles. Myelocytes were not found and nucleated red cells also were absent.

The subsequent history of McCrae's patient is unfortunately not known, beyond the fact that he died suddenly several months later in California, from what his physician regarded as an attack of cerebral hemorrhage.

To summarize, we have here an undoubted case of myelogenous leucemia in whom twice within less than twelve months the classical features of the disease, viz., splenomegaly and myelemia, could be demonstrated and then disappeared. At neither intermission was there any evidence of an intercurrent disease, to account for the improvement.

Senn's case occurred in a woman, aged twenty-nine years. In the early part of the winter of 1902 she first became conscious of increasing weakness and three months later discovered that her abdomen had become greatly enlarged. On admission to Senn's service, January 1, 1903, she was somewhat emaciated and profoundly anemic. The spleen extended nearly to the pubes below and two inches beyond the median line on a level with the umbilicus. Blood examination on February 3 showed 56 per cent. of Hb.; 3,500,000 red cells and 64,800 leucocytes. A differential count is not given. Senn speaks of myelocytes and numerous eosinophiles and also mentions that poikilocytosis was very pronounced.

Following a three weeks' course of iron and Fowler's solution without noticeable improvement, X-ray treatment was instituted on February 3 and continued daily with occasional intermissions until about the middle of June. The spleen presented indications of progressive decrease in its size about three weeks after the beginning of the X-ray treatment, and it was noticed that improvement of the blood condition kept pace with the reduction in the volume of the spleen. During this time high temperatures were observed besides "other symptoms of intoxication." On April 12 the examination of the blood showed no myelocytes and only a very few eosinophiles and very little poikilocytosis; at the last examination which was apparently made in June there were "no abnormalities in the structure and relative number of the red corpuscles and leucocytes."

Senn regards his patient as cured and attributes the result entirely to the prolonged use of the X-ray treatment.

Plehn's case was a male, aged forty years. The patient's complaints began with pains in the left leg on October 20, which rapidly increased in severity and led to his admission to the hospital on October 30. There was then marked tenderness of the patella and the tibia, ascites, hepatic enlargement, icterus, splenomegaly to within two finger breadths of the umbilicus and below this a retroperitoneal hematoma (of splenic origin), slight enlargement of the inguinal and cervical glands, moderate albuminuria and evidence of retinal hemorrhages. The condition of the blood showed a mixed cell leucemia. There was 35 per cent. of Hb.; the red cells numbered 2,180,000 and the leucocytes 90,000, with many neutrophilic myelocytes.

By November 14 the disease had progressed. The spleen extended almost to the umbilicus; new retinal hemorrhages had occurred; the red cells had fallen to 1,600,000 and the leucocytes had increased to 149,000. One third of the latter were myelocytes. From this period there was rapid improvement. On December 8 the albuminuria, the ascites and the hematoma had completely disappeared; the spleen only extended three finger breadths beyond the costal margin. The Hb. was 54; the red cells numbered 3,092,000 and the leucocytes had dropped to 4,600. By the 31st of the same month the spleen could be felt a finger-breadth below the costal border: the Hb. had risen to 60 per cent., the red cells to 3,500,000, while the leucocytes had further diminished to 3,000. This was essentially the condition of the patient at the time of Plehn's report (January 6). The myelocytes had not completely disappeared, but were much diminished—about one to a specimen. Noteworthy is the fact that while the myelocytes represented about one third of the total number of the leucocytes at the height of the disease, the blood gradually assumed somewhat of a lymphatic character, and at the time of the report the mononuclear non-granular elements (comprising both lymphocytes and large mononuclear leucocytes) were present in the ratio of about 45:54.

To sum up, we find that in Plehn's case there had been a drop in the number of the leucocytes from 149,000 to 3,000 in about seven weeks, and that coincidently the splenomegaly had very much diminished. Strictly normal relations had not been established and Plehn himself does not regard his patient as cured; he looks upon the relative lymphocytosis as evidence of a pseudo-leucemia (Ehrlich). The treatment in this case consisted in the hypodermic use of arsenic. Plehn does not refer the manifest improvement in the condition of his patient to its use, however, and suggests the possibility that this may have been dependent upon the resorption of the hematoma.

In the discussion which followed Plehn's report in the Berliner medizinische Gesellschaft, Kohn mentioned two cases of leucemia, which came under his observation and in which an apparent cure had resulted. The data furnished, however, were very meager:

One case occurred in a child, aged three years. The condition here was apparently an acute leucemia (a high grade of anemia and prostration; fever; numerous petechiæ; hemorrhages from the gums, nose and intestines; gingivitis; splenic tumor, enlargement of the liver; slight enlargement of the lymph glands and a high grade of hyperleucocytosis referable to lymphocytes). The condition appears to have been quite desperate, notwithstanding the use of arsenic. This was then discontinued and after a few weeks the child

appeared to be perfectly well again, barring "a certain disproportion of the various forms of leucocytes." The improvement continued for two months. Gradually the liver and spleen become enlarged a second time, the blood condition again became worse, another attack of acute leucemia developed, and the child died.

In the second case the data are too meager to draw any conclusions regarding the condition of the spleen and the blood. The disease had apparently lasted with periods of improvement, interspersed with occasional exacerbations, for ten or eleven years.

Senator further remarks that he has seen remissions in the course of a leucemia which could not be referred to intercurrent disease. He only cites a case of lymphatic leucemia, however, in which the blood was apparently normal, but in which there still existed a moderate enlargement of the spleen. Cases of this order, however, do not enter into consideration in the present instance, as we have reference only to cases of myelogenous leucemia in which, together with an improvement in the patient's general condition, both the splenomegaly and the myelocytes have disappeared. An improvement of either factor alone, irrespective of any intercurrent malady has been repeatedly observed, and to this class of cases the instance cited by Senator and possibly also Kohn's second case belong. There accordingly only remain the three cases of McCrae, Senn and Plehn and the first case of Kohn.[1]

To this small list we can add a further case, wherein both the splenomegaly and myelocythemia disappeared and in which the patient's improvement has now lasted nearly a year.

Mrs. M. S., aged thirty-five years. The patient's family history contains nothing of interest. As a child she had mumps, diphtheria, whooping-cough and malaria; at eighteen measles and at twenty-one pneumonia. Menstruation began at thirteen. She was married twice, the first time at fifteen. From the first marriage she had two children and one miscarriage; from the second two miscarriages. Her general health had been good until 1899. Following a good deal of worry she then lost her appetite and slept badly, but definite symptoms of actual sickness did not appear until two years later, in 1901. She then noticed a bulging from below the ribs on the left side, which gradually increased and extended to the left groin. Coincidently, her dyspeptic symtoms became more troublesome, she suffered from palpitations of the heart on slight exertion, from headaches and also experienced pain below the ribs on the left side, between the shoulder blades and in the legs, which were sufficiently intense to interfere with her sleep. She gradually grew weaker and lost flesh.

The splenic tumor was discovered by a physician in March, 1903, and she was sent to a hospital, where the diagnosis of splenomyelogenous leucemia was made. Her red cells then numbered 1,700,000 and the leucocytes 350,000. She was kept in bed for four weeks and given Fowler's solution in increasing doses.

On April 12, when the patient was first seen by Dr. Simon, she weighed 140 pounds (usual weight 167). She then complained of numbness in her toes and fingers, and had difficulty in fastening her clothes. She looked moderately anemic. The spleen extended almost to the umbilicus and well below the costal border in the nipple line. The liver was not palpable. There was no enlargement of the superficial lymph glands. At the apex there was a soft blowing systolic murmur, scarcely audible at the base, and not transmitted to the axilla; the area of cardiac dulness was not increased.

A blood examination at this time showed 54 per cent. of hemoglobin, 1,760,000 red cells and 4,000 leucocytes. Of these 21.7 per cent. were small mononuclears: 2.7 large mononuclears; 51.6 polynuclear neutrophiles; 6.7 polynuclear eosinophiles; 10.8 mast cells; 5.9 neutrophilic myelocytes and 0.2 per cent. eosinophilic myelocytes. While counting 368 leucocytes, 23 normoblasts and two megaloblasts were seen. Noteworthy was a marked grade of anisocytosis and poikilocytosis, and polychromatophilia also was quite pronounced. Granule cells (red) were present in small numbers.

The patient had been taking eight drops of Fowler's solution three times daily and was instructed to increase the dose.

She was again examined on April 28. She had increased the arsenic to 19 drops three times daily without any untoward effects. Her physical condition was unchanged. The Hb., however, had risen to 67 per cent., and the red cells to 3,400,000. The leucocytes numbered 5,000. A differential count showed 13 per cent. of small mononuclears; 9.3 per cent. of large mononuclears; 60.5 polynuclear neutrophiles; 3.9 polynuclear eosinophiles; 8.5 mast cells; 3.9 neutrophilic myelocytes and 0.5 eosinophilic myelocytes. The nucleated red cells had diminished; only four normoblasts and one megaloblast were seen while counting 352 leucocytes. The plaques seemed much increased. Otherwise the blood condition appeared unchanged.

The next note was made on May 5. The patient had increased her arsenic to 22 drops three times daily, and appeared to be much improved. The physical condition, however, was unchanged. Her weight had increased five pounds and a half since April 12. The Hb. was 68; the red cells numbered 2,112.000 and the leucocytes only 2080. Poikilocytosis was still very pronounced; there were many microcytes, but no tendency to oversize. Granule cells were present in fair numbers. The plaques still appeared increased. While counting 381 leucocytes, only two normoblasts and two megaloblasts were seen. The differential count showed 23.0 per cent. of small mononu-

1 This latter being an acute lymphatic leucemia, with splenomegaly and with slight involvement of the lymph glands only, can probably be regarded as of myelogenous origin and is accordingly included in our list.

clears; 6.3 large mononuclears, 49.8 polynuclear neutrophiles; 7.1 polynuclear eosinophiles; 10.9 mast cells; 1.9 neutrophilic myelocytes and 0.7 eosiniphilic myelocytes.

On May 14 the spleen was found much reduced in size; it could just be palpated at the costal border. Her Hb. had risen to 75 per cent.

During the summer months the patient was not seen. On October 22, when the next note was made, she stated that she had suffered a great deal of pain along the region of the attachment of the diaphragm, and had had an attack of pleurisy, of which nothing definite, however, could be learned. She had taken Fowler's solution with brief intermissions during the entire summer, and had gotten as high as twenty-six drops three times daily. At times she had been very much puffed. Quite recently she had been examined for life insurance and passed. Her weight had increased to 151 pounds. The spleen was barely palpable on deep inspiration. Noteworthy was the marked brownish pigmentation of the abdomen (arsenical). The Hb. was 80; the red cells numbered 4,400,000 and the leucocytes 5,600. Of the latter 29.6 per cent. were small mononuclears, 2.2 per cent. large mononuclears; 55.5 per cent. polynuclear neutrophiles; 4.4 per cent. polynuclear eosinophiles; 5.9 per cent. mast cells; 2.2 per cent. neutrophilic myelocytes and 4.4 per cent. eosinophilic myelocytes.

On November 23 she was again seen. Her weight had increased to 156 pounds, a total gain of 16 pounds since April 12. The pigmentation of the abdomen remained unchanged. The spleen could scarcely be felt. The patient had been taking her arsenic quite regularly—up to 26 drops three times daily, but has had a good deal of digestive disturbance. There is still pain along the lower ribs on both sides. The Hb. was 75; the leucocytes numbered 5,000. Of these 19.8 per cent. were small mononuclears; 6.2 per cent. large mononuclears; 62.7 per cent. polynuclear neutrophiles; 1.8 per cent. polynuclear eosinophiles; 6.8 per cent. mast cells; 2.4 per cent. neutrophilic myelocytes.

December 16. The patient has still maintained her high doses of Fowler's solution—26 drops three times daily—with brief intermissions. There has been some nausea, which improved on withdrawal of the arsenic. The pain along the lower ribs and between the shoulders is frequently quite distressing. The spleen is scarcely to be felt. The leucocytes numbered 4,000.

On January 26 the patient's physical condition was still unchanged, but she is manifestly not standing her arsenic so well as formerly; with the higher doses, 20 to 26 drops three times daily, she has a good deal of nausea and has vomited on several occasions. The pain between the shoulders and along the lower ribs continues as before—at times better, at times worse.[1]

Her headaches, from which she suffered quite frequently early in the course of the disease are much improved; she feels stronger in every respect and is no longer troubled by palpitation of the heart. Her weight is 152 pounds. She looks well and certainly does not make the impression of an invalid. The pigmentation of the abdomen is very marked, especially in the flanks; the elbows also are quite dark. The spleen can just be felt on deep inspiration; this is greatly facilitated by the relaxed condition of the abdominal walls and the wide costal angle without which the organ could probably not be palpated at all. The lymph glands are nowhere enlarged. The Hb. is 76 per cent.; the red cells number 3,984,000 and the leucocytes 4,500. There is still marked poikilocytosis and some anisocytosis. The small mononuclears were 34.0 per cent; the large mononuclears 31 per cent.; the polynuclear eosinophiles 6.3 per cent.; and the mast cells 11.5 per cent. Myelocytes were not found in a count of 1,000 cells. Nucleated red corpuscles were also not encountered.

The last examination was made on March 8, *i.e.*, just about one year from the time when the patient first went to the hospital. For the first three weeks following the last note she had taken no arsenic whatever; since then she has resumed her drops, but has not been able to get beyond ten drops three times daily; even this amount is not so well borne, but causes a great deal of nausea. She has gained three pounds, and looks quite well. The condition of the spleen is as above. The Hb. was 80; the red cells numbered 5,200,000 and the leucocytes 6,500. Of these 26.7 per cent. are small mononuclears; 14.4 per cent. large mononuclears; 51.5 per cent. polynuclear neutrophiles; 3.3 per cent. eosinophiles and 3.5 per cent. mast cells. An occasional myelocyte was encountered, but the number did not exceed 0.4 per cent. There are a few granule cells. The poikilocytosis is much improved.

To sum up, we have a patient in whom three years ago undoubted symptoms of a myelogenous leucemia developed. When the patient entered the hospital one year ago her spleen was greatly enlarged and the blood was absolutely characteristic of the disease, the leucocytes numbering 350,000. A month later they had fallen to 4,000; the myelocytes had diminished to 6.1 per cent. and there was nothing in the blood picture with the exception of the high percentage of mast cells (10.8) to suggest a leucemia. The spleen, however, was still quite large. Six weeks later this symptom also had nearly disappeared and ever since (now ten months) the spleen has been scarcely palpable. The patient's weight has increased; her Hb. has risen to over 75 per cent. and the red cells have increased correspondingly; the number of the leucocytes has been normal and even subnormal; and at no time since April 28, 1903, has the percentage of myelocytes been above 2.4; on January 26 indeed not one myelocyte was seen in a count of 1,000 cells. Significant, however, is the fact that the mast cells

[1] The persistent character of this pain, while not uncommon in leucemia, led to a careful examination of the urine. The Bence Jones' albumin was absent.

have been constantly much above the maximum normal; they varied between 3.5 and 10.8 per cent. As is well known, Ehrlich has laid great stress upon this factor in the diagnosis of myelogenous leucemia, and there is indeed no other condition known in which a similar increase has been observed.

Senn and Plehn unfortunately have published no differential counts in their cases, and McCrae only gives one mast cell count, which was made during an active period of his patient's illness.

Upon the basis of the greatly increased percentage of mast cells we believe that even now, and without a knowledge of our patient's past history, the diagnosis of myelogenous leucemia would be justifiable. Notwithstanding the general improvement, the disappearance of the splenomegaly and the absence of myelocythemia, there can scarcely be any doubt that the arrest of the disease is merely temporary, if indeed there is arrest of the pathological process. Opposed to such an assumption is the fact that even now there is a certain degree of poikilocytosis, which is out of proportion to the degree of residual anemia. This feature has been quite remarkable ever since the patient first came under observation, and together with the occasional increase of the color index was strongly suggestive of a pernicious anemia. That the blood picture of leucemia may pass over into that of pernicious anemia has been observed. Gerhardt[6] thus recorded a remarkable instance where the ratio of the leucocytes to the red cells had been 1.3; the leucocytes then rapidly diminished within three days, and the blood picture of the leucemia was replaced by that of a pernicious anemia. In our case there was lacking, however, that grade of granular degeneration of the red cells, which in pernicious anemia is so marked and so constant; besides, the small mononuclear leucocytes were not increased, while in pernicious anemia during the active stage of the process this is a very common event and to a certain extent characteristic. The significance of the increase of the mononuclear elements, which has been noticeable of late, can only be a matter of speculation.

As we have already stated, we do not in the least believe that our patient has recovered, nor do we think that Senn has adduced sufficient proof to warrant the conclusion that his patient was cured. This patient was dismissed from observation about the middle of June—3½ months approximately after the spleen first showed signs of diminution in size. Senn's article appeared on August 22. This interval is certainly too brief to warrant any fargoing conclusions, so far as the question of a cure is concerned. In the light of our own case, and that of Plehn, moreover, it scarcely seems justifiable to refer the improvement in the patient's condition to the use of the X-rays. Whether it would be admissible, on the other hand, to ascribe the improvement in our case and that of Plehn to the arsenic may similarly be questioned. The treatment in Kohn's case is not very clear, but it seems that the improvement began when the arsenic was discontinued. We believe these cases merely show that both the splenomegaly and myelocythemia may temporarily disappear, together with an improvement of the patient's general condition, but the rapid recurrence in Kohn's first case and in McCrae's patient, and the death of both, throws grave doubts upon the propriety of viewing such improvements in the light of a cure.

Since the above notes were sent to the editor several additional examinations were made of the patient's blood, the last on the 23d of May. Her red cells then numbered 5,480,000 and the leucocytes 3789. There were 47 per cent. of mononuclear elements, 35 per cent. of polynuclear neutrophiles, 6 per cent. of eosinophiles and 12 per cent. of mast cells. There were no myelocytes and the poikilocytosis and anisocytosis had almost entirely disappeared. The patient's general condition remained unchanged, and the spleen was not palpable even on deep inspiration. The improvement has thus continued for over a year.

In the literature three additional cases have been recorded, in which a symptomatic cure was apparently effected. The interval in these cases which has elapsed between the return to approximately normal conditions and the time of publication, however, is too brief to warrant any fargoing conclusions. The cases in question are those of Brown[7], and Bryant and Crane[8]. In two of the three the improvement may have been referable to the X-ray treatment, which was employed, but in Bryant and Crane's second case arsenic only was used. It is interesting to note that in this case there was a hematoma of the right ankle, the result of an injury, which was incised on two occasions.

A fourth case of myelogenous leucaemia has further been reported by Grosh and Stone, in which, as the result of X-ray treatment apparently, there was a marked improvement in the condition of the blood, but in which the splenomegaly did not disappear. The number of the leucocytes in this case fell from 266,250 to 10,600 and the myelocytes from 52 to 2 per cent., while the patient's general condition also was improved. This patient rather suddenly, i.e., within a few days, began to fail in strength and died of general asthenia.

In reference to Senn's case finally I have a note written in April, according to which the patient then had a mild relapse. S.

July 13, 1904.

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A VISIT TO GHEEL.

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To one who has been accustomed to approach the dwellings of the insane as one would a king's palace; to proceed through avenues and formal gates to an imposing edifice, and to be ushered in by attendants to the presence of the superintendent of an American hospital for the insane, it was something of a novelty to arrive on a local train in the late evening at the small station of Gheel, in Belgium, and to be suddenly set down in the dark in the midst of a colony of nearly 2,000 insane people who were living at large in any or perhaps all of the cottages that were faintly discernible in the dusk of the flat landscape.

No vehicle or porter and no sign of life was visible in the town, except a few lights in the village. A bowing acquaintance with scientific German and French is of but slight aid when one is twenty-five miles from the linguistic center of Antwerp. Flemish was the only tongue of the natives, but the presence of a valise and the ignorance of the language plainly indicated the necessity of a hotel, and we were soon being guided by a taciturn fellow through the one long, closely built street, to the only hotel of the village. Side by side, and level with the street, without doorstep or garden plot or outside walk, the low two-storied houses made an unbroken wall on either side of the street. Shuttered windows and the wide deserted street gave the impression, which was probably true, that at eight o'clock the business and social life of Gheel was at an end for the day.

Visitors for Dr. Peters, the Director of the

VIEW OF GHEEL. CHURCH OF ST. DYMPHNA.

Colony at Gheel, were evidently a proper source of revenue to the inn, and despite the extreme lateness of the hour our guide, whom we found was an epileptic, was bidden to take a note announcing our visit to Dr. Peters the next morning.

To obtain a carriage for the tour we wished to make seemed a proper courtesy, for we learned that there was no livery connected with the institution, and that the physicians and assistants made their visits over a space of nearly twenty square miles by bicycle, or by means of a local train, or on foot. No carriage was to be had, however, in Gheel, everything that horse could draw was in requisition for a pilgrimage to some shrine in a neighboring village. This reminded us that for centuries Gheel had had a shrine to which pilgrims came to be cured. In the ninth century a young Flemish girl had been beheaded there by her father, who was enraged because she repulsed his amours. In the early days sufferers from all diseases came to be cured at her tomb, which gradually became famous as a resort for "those possessed of evil spirits." In fact, the actual origin of the system of boarding out patients which now constitutes the colony, was in part due

A STREET IN GHEEL.

to the fact that the pilgrims could not all be cared for by the church, and the inhabitants of the town offered their hospitality to the strangers until such time that their turn might come for the miracle to be invoked in their behalf.

For many hundred years the treatment of the insane at Gheel consisted only in prayers and penances and exorcisms; in the eighteenth century the colony became a recognized local institution; but it was not until 1851 that the State assumed control over it and regulated its affairs.

Since then the colony system for the care of the insane has been brought within the jurisdiction of the Minister of Justice, and is subject to the various laws which control all the institutions for the insane in the kingdom of Belgium.

By reason, however, of its slow growth, and the personal interest of its directors, a very interesting economic and social condition is presented by the existence of the colony. Had Gheel been organized on paper before the colony came into existence, it would have been laid out straight, plumbed and drained, and the cost of maintenance would have been greater to the State. As it is, it consists of a poor rural community, small farms, occupied by low one-story dwellings, tiny villages, with the town of Gheel at their center, and meadow lands traversed recently by local steam cars, run much on the principle of an American trolley.[1]

The only imposing buildings in the town other than the Cathedral, which rises from the market-place, are the administration buildings and infirmary of the Colony of Gheel. The double row of fine trees and the shrubbery and grass at

[1] (See article by P. Masoin, "Care of the Insane in Belgium." *Journal of Nervous and Mental Disease, August-September*, 1904 (in press).

the entrance lent dignity to the buildings which would have been considered small for administering a colony of this size in America. But within, the strictest economy of space was observed. The large, home-like living room of the superintenent, Dr. Peters, served as a reception room which led

AVENUE OF THE INFIRMARY. DIRECTOR'S OFFICE TO RIGHT.

immediately to plainly furnished business rooms and thence to the wards where a few sick patients were being cared for, and a small number of semi-private rooms where certain patients always lived. About sixty can be accommodated here, if for bodily or mental ailments they must be removed from the homes of their guardians.

The small garden in the immediate rear was brilliant with flowers, and rich in fruit, plums, grapes and pears hanging thick on low carefully trained trees and vines. The barred windows of the detention rooms, where newcomers spend their first few nights, or where violent cases are watched, looked out on a level with the garden; and on stepping from one part to another there was a sense of cosy compactness and consideration for the home comfort of every one dwelling within the grounds.

At the hour of nine, when we arrived, Dr. Peters, the Medical Director, who is at the same time chief of the administrative as well as the medical service, was busy receiving the reports of his assistants on their preceding day's work.

From a medical point of view, the colony is divided into four sections, each of which is cared for by a physician who has two section guards to help him. These physicians must devote themselves exclusively to the care of the insane, and are formally forbidden to practice, except in matters of expert medicolegal work. They must visit the curable patients once a week and the others once a month. At each visit the physician signs a card which the patient's guardian keeps, recording the condition of the patient's room, general care and condition. The section guards see that the physician's special orders are carried out, and report each evening to his superior. After each physician has made a morning's report of his own and his assistant's work, the Medical Director finds himself in close touch with all the work of the Colony.

At a first glance it would seem as though considerable time must be lost daily in going from house to house, and it is true that the distances which must be traversed take considerable time, as some patients live several miles from the administration building. As the placing of patients in families is decided by a local committee in the town, and does not rest wholly with the Medical Director, there is some friction caused by the fact that patients are not grouped as conveniently as they might be, and are not always placed in surroundings suitable to their cases. But this limitation of the Director's power seems to be the only one that causes any trouble in the harmonious and wise administration of the colony.

The physicians travel from house to house chiefly by bicycle, covering long distances by the local train. The ease with which a physician can care for a ward full of patients in an institution as compared with the slow personal visiting is at first sight a factor in favor of the institution system, but when it is remembered that four men and eight deputies attend systematically to over 2,000 patients, and that no paid attendants are employed, it will be seen that the system is arranged much more economically than in our institutions, and that the only persons who might have

THE INFIRMARY AT GHEEL.

reason to complain are the hard-working young physicians themselves, who, on salaries as proportionately modest as are all the other expenses of Gheel, nevertheless do very excellent routine work, as well as original investigation.

The personal interest and oversight of the Medical Director was apparent within the first quarter of an hour's tour of the infirmary with Dr. Peters. The spotless condition of the bare floors, windows and plain furniture and bedding indicated a cleanliness arising from work which lent an impression of thrift and good management that one does not get in a modern tiled and plumbed institution of America. In a large and cheerful sitting room a few patients were gathered, who, though possessed of means sufficient for a private institution, had been sent to Gheel for the benefit of family life, and were on account of their greater refinement, lodged more nearly under Dr. Peter's care; but with the exception of a few who had been suffering from a period of disturbance, or slight accident, and a few aged patients who were nearing the end, the Infirmary was not occupied; for the class of patients who are sent to Gheel are such as require but little hospital care.

As a rule they are all able-bodied and are taken largely from rural homes where their presence is

a hindrance to the other members of their families, and are transferred to the homes of Gheel where their slight services combined with their board make them a welcome addition to a poor community. No patients are admitted to the colony who must continually be kept under restraint, nor who would offend public decency; and none who have homicidal, suicidal or incendiary tendencies.

All who are able to work are paid a small sum each week by their nurses or hosts. Some work in the field, others in the shops, while the women tend children, prepare vegetables and do household work.

According to their value as workers or to the care they require as patients, the sum paid to their nurses for their board by the state varies. In our land of luxuries it is impossible to believe how little is required for the per capita maintenance of the patients on this system.

Paupers who are able to work and who are quiet and orderly, belong to the first class. For them 64 centimes, or about 12 1-2 cents is paid daily for board. In this class are a good many idiots and dements. For paupers of the second class, those who are noisy or semi-depraved, 80 centimes, or 16 cents a day is paid. Patients of the third class, wholly depraved or epileptic, bring with greater care the larger revenue of one franc, five centimes, or 21 cents a day, to their nurses.

Patients whose friends have means can be lodged with more comforts at a higher rate in the

TYPE OF HOUSE IN WHICH PATIENTS ARE QUARTERED.

homes of the more well-to-do. For, through the long establishment of the custom, the permission to have patients is largely sought as a favor by nearly all the householders of Gheel.

It was with these statistics in mind that we started forth with Dr. Masoin, one of the attending physicians, to make his daily rounds. Our institutionized proclivities demanded a carriage in order to see the most in the shortest time, but there appeared to be no coach and pair even at the bidding of the superintendent, and our efforts to engage any kind of a conveyance in Gheel proved fruitless. The pilgrimage to the shrine in a neighboring village was still a drawing attraction, and every horse had jogged off with a load in the early morning so we were obliged to make a typical day's rounds in the usual fashion.

A ten minutes' ride in the railway train brought us to a little hamlet of half a dozen cottages, farms and a few houses near each other in the road. These latter seemed to bear a commercial relation to the others. In one bread and ginger-cookies were sold. A woman came into the bare front room where the counter was, with several children clinging to her skirts. Through the open door we could see in the clean little back court beyond the "big child," a dull-looking imbecile, who was slowly peeling potatoes, and around whom the children immediately went to play, as soon as we had bought out the stock of one of their mother's candy jars for them.

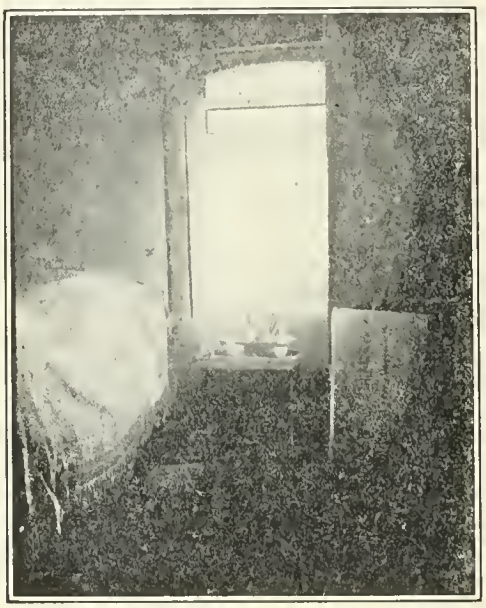
In the next house, a few deal tables and the presence of the man of the house and several others eating bread and cheese, indicated a tavern. A sleek, melancholy looking man of thirty, with a child-like smile, was the patient. He was afflicted at times with religious mania, and his guardian, the tavern keeper, explained in detail, and with considerable intelligence, their boarder's condition for some days past, his silence and troubled stare and continual praying, which he feared was the preliminary of an attack. The neighbors listened with interest and the patient sat among them brooding in his corner, in the attitude of one who is aware of sympathy rather than of being shunned. In his rooms were several religious pictures and adornments, as well as family photographs. These showed his family group, of evidently well-to-do tradespeople sitting on the porch of a suburban home. He wrote to them and received their letters, but seemed to be perfectly content in the less conventional surroundings of friendly farmers.

In a third house which we entered we found a picturesque interior belonging to the type of low thatched farmhouse, which is now giving way to the slated brick house. In this an enormous crane in a huge fireplace supported a great iron pot, in which over a tiny fire, a mash was being prepared for the cattle. When it was ready the kettle was swung round to a low door beside the fireplace that entered directly into the stable, and there tipped up, without being taken from the crane in the living room, the mash was poured directly into the trough of the cows, who had their heads well within the door in their expectation.

A little old dame of eighty years was the guardian in this home. Her short petticoat and wooden shoes, the sanded floor with its combed pattern, the little white curtains and pots of flowers in the windows, and the row of bright pewter plates on the dresser, all had a flavor of a faraway time, that this prosperity of 21 cents a day income was fast driving out of Gheel. She brought out her patient with the pride of a grandmother. He was a clean, palsied, smiling old fellow of seventy, whom she and her husband had cared for for fifty years in this home. His shaking fingers were covered with brass and wooden

rings over the knuckles. These he played with and held them up sheepishly for inspection. His guardian told us indulgently that he had a sweetheart and was engaged to be married to her, and patted him as she would a child, at which the old fellow nodded and laughed and mumbled garrulously.

This was a prize household, for on the walls were several little plainly framed cards certifying that once and again she and her husband had won one of the money prizes, which are graded up to twenty-five francs, for the best personal care of their patients and the most neatly kept rooms and house.



A PATIENT'S ROOM.

In every case the physician went into the patient's bedroom, ripped open the bed, and saw that its course sheet and woolen blanket were clean, examined the additional garments hanging on the wall, and entered his report on the card which the guardian brought to him as he entered. In all cases the tiny bedrooms were scrupulously clean and the bare floor sanded. They were generally on the first floor and opening directly off the living room. In many of the more modern houses they are built expressly for the patients and supplied with a regulation style of bed and bedding. The doctor included in his inspection the food of the household, the back yard, which seemed to be the family gathering place and workroom, and the patient's personal appearance. The card was checked with his visit. A system of card checks is used for the visits of both the physicians and the attendants. These are subjected to directoral supervision at stated intervals. Such supervision is far from perfunctory.

The food of the patients is the same as that of their guardians, and consists of vegetables, potatoes, salt pork, milk and bread and butter. Very little fresh meat is used, and then generally as a stew. Much of the bread is of rye. The patients eat at the table with their guardians, and as there are never more than two in a family, they are absorbed and made part of the family life. More than that number would make a separate faction in the family. Although the food is not of a high grade, it is the food of the peasant class to which most of the patients belong; so it is quite as good as they would get in their own homes.

NEW BATH-HOUSES FOR THE COLONY.

The guardians are obliged to feed their patients as well their payments will permit, and a sort of check is kept upon them by means of the bath-house weighing system. In several parts of the community have been erected neat bath-houses to which patients are taken in detachments each week. Once a month each patient must be weighed, and if the weight falls short at any time except in the summer months, when a certain loss is expected, the guardians are held accountable for his food. Unquestionably the diet is poorer than in our institutions, but it is evidently sufficient, and a system of inspection among the deputies who may happen in at any meal to examine the fare, tends to stimulate the housekeeper to make the most of her rather restricted means.

Many features of medical and economic interest were for a time lost in the charm of the unique surroundings of this Colony of Gheel. Innumerable questions arose, to be forgotten in the quaintness of the landscape and the picturesqueness of the people, their houses, and their thrift and their poverty.

It seemed so different a people and so far away a time that comparisons for our own peoples, and our own times appeared impossible. What has been built up at Gheel through centuries cannot be suddenly reproduced here in America. The idea is being developed, as we all know, in several communities in different States, but we can never hope to build up artificially a system which in its most essential features can resemble Gheel. Could we find here and there a simple kindly farming community discouraged by the stern laws of supply and demand, and imbue the inhabitants with a combined spirit of philanthropy and commercialism, we might gradually with great tact find homes for many thousands of our insane, in the course of the next fifty years.

64 West Fifty-Sixth Street.

PERSONAL EXPERIENCE IN THE TREATMENT OF TYPHOID FEVER.[1] [2]

BY CARTER S. COLE, M.D.,

OF NEW YORK.

ALL of us who have had any considerable experience in any direction are prone to believe, either correctly or incorrectly, that we have found some way to meet the problems offered, which is easier for us (and as safe for our patients) than any with which we have become familiar from the literature. Or, it may be fairer to say that our experience has been crystallized so as to offer in a way that is the result of reading and experience something that is in effect the same, but is in reality different. In short, our individuality must be impressed upon our work, and it is with this understanding that I presume to give you a short review of my own experience in treating a disease all too common and, alas, too frequently fatal.

As far back as 1887, when in the Charity Hospital (Blackwell's Island) I carefully reviewed the subject in many authorities, and in a lecture given to the nurses there the following year, I stated as my belief that the nurse who was fitted to care properly for a case of typhoid fever needed no other testimonial to her ability in her profession.

Fifteen added years of experience with that disease have amply justified this statement, and I might add that the physician who is abreast of every possibility in that disease is well equipped to care for a large portion of the ills of mankind.

To fairly fix a plan of treatment in any disease it seems to me quite necessary to be agreed on the etiology and pathology of the same; and, fortunately, in typhoid fever, this is settled with sufficient security to enable us to draw some warranted inferences as to what we must expect and how far we can hope to influence what we find.

The existence of temperature is a necessity, is a part of the disease, and its control is our important mission; the state of ulceration, the character of the typhoid poison in the individual case and its effect on the patient are our guide posts as to what is a normal increase of temperature in the case under our care. In short, every case of typhoid has its own peculiarities which must be noted, and carefully considered in carrying out the treatment for that case. This is true not only in regard to temperature variation, but also as to the nutrition, intestinal condition, nervous condition, tongue conditions, etc.

I could illustrate indefinitely, but one or two instances will be sufficient to emphasize my meaning. Two gentlemen in general about the same age, size and vitality, contract typhoid from apparently the same source and at the same time. One has a high-fever type, with an eruption from his neck to his feet. The other never has a temperature over 100° F., and a very limited abdominal rash. The one is delirious all the time and dies of heart failure at the beginning of the fifth week; the other is never delirious but has almost a melancholia, from which he does not recover for nearly a year.

Again, a child has a frightful attack of typhoid of the high-fever type, characterized by a profuse eruption, accompanied by a pneumonia in the original attack and by an infection of the large intestine in the relapse. One of her nurses contracts the disease and has a comparatively simple attack with few spots, with low temperature, and only troublesome on account of the great difficulty in keeping her sufficiently nourished by reason of an ever-present nausea.

The first is fatal, the second makes a good recovery, interrupted only by return of temperature due to interference with intestinal secretions and to a lack of nutrition, owing to the difficulty mentioned.

And, let me here remark the frequency of this form of recrudescence, often wrongly attributed to reinfection, the error being especially serious to the patient, as the treatment of the two conditions is absolutely different. In cases of relapse the same treatment must be pursued: in recrudescence due to low vitality and not to reinfection solid food must be added and the nutrition generally improved. I might indefinitely parallel cases, apparently due to the same infection, but absolutely different in their type and in many manifestations.

We all know that the high-fever type in the first week does not necessarily mean high-fever type for the whole attack, and we know too well the false security that the early low type of fever is apt to engender. Perhaps it is fair to say in a general way that 101° F. is the average fever type for the first week; 102° F. that of the second week; and 103° F. that of the third week, and basing my belief upon this generalization, admitting that higher, and less frequently lower types are by no means uncommon, I have for years systematized my baths and my stimulation, using the actual fever in the individual case as my guide.

The same is true in regard to nutrition. Some cases need much more nutrition than others; some get along better with a limited amount of nutrition. All cases in my experience do best on an absolutely liquid diet during the fever period.

In planning then the treatment of the typhoid case, we must consider: First, the nutrition; second, the stimulation; third, medication; fourth, antipyresis.

On the question of nutrition there is a fair degree of unanimity, except as to detail. Peptonized milk and koumyss have been my general sources of reliance for nutrition, and with slight variations for the individual case, I order six ounces every two hours between 6 a. m. and 12 midnight, with a single feeding usually between 12 midnight and 6 a. m. Sometimes I make the interval three hours and seldom find cases in which I am unable to give 48 to 50 ounces of

[1] Read before the Alumni of the Charity City Hospital Wednesday, March, 1904.

[2] Received for publication April 8, 1904.

liquid nutrition in the twenty-four hours. Water I allow *ad libitum* throughout the disease.

When I find that milk in any form is not well borne I employ some of the beef, mutton, chicken, clam or oyster broths, the white of egg and sometimes the yolk of one or two eggs, always recognizing the fact that when we are unable to use milk for nutrition the troubles for our patient and ourselves are multiplied.

Next we consider the subject of stimulation, and on this point there is considerable difference of opinion; my own preference is for good whisky in one-half ounce doses where it is well borne and does not cause an increase in the pulse but seems to steady and strengthen it, given after each bath, or if it cannot be taken so often, at least four times in the twenty-four hours. Some patients cannot take any form of alcohol, but those that can are more easily furnished with something for combustion which will save the tissues and conserve the strength. In fact, in my experience alcohol has been quite as valuable for food as for stimulation. The cases which cannot take whisky will sometimes take brandy very well, the dose being a little less; occasionally champagne can be used to advantage. Other wines have not proved very valuable in my hands.

The question of cardiac stimulation has been readily solved for me by the use of nitroglycerin and strychnine in the cases in which it seemed to be indicated. I have found it necessary occasionally to begin the use of these drugs almost at the outset and continue into the period of convalescence. In several cases I have found that they were not required at all. In the majority of cases I find that the use of 1-100th of a grain of nitroglycerin and 1-50th of strychnine from two to four times in the twenty-four hours, beginning about the tenth or twelfth day, and keeping up the administration into the convalescent week, seems to give the heart useful stimulation and support. Where the strychnine seems to increase the nervous and muscular irritability, we must substitute some other form of heart stimulant. Strophanthus is useful, and in some cases digitalis seems to be of benefit, but my preference is always for the first named drug.

The third on the list is medication and can be very easily disposed of. Aside from meeting special indications I may say that I use no drugs at all. At the outset I like to get the intestinal canal thoroughly cleansed, usually by a dose of calomel followed by a saline cathartic; after this I seldom if ever find it necessary to use any catharsis at all, the bowels being moved either daily or every other day by the use of a simple enema.

In cases in which hemorrhage threatens, or is present, I find the treatment employed for many years by Dr. Pepper of Philadelphia entirely efficacious, viz., one-sixth grain of nitrate of silver given every three, four or six hours, or even as often as every two hours in individual cases. I have not found it necessary to follow his practice in giving it in all cases from the beginning of the second week to the end of the third week, but I have not hesitated to do so in the high fever type, where considerable intestinal disturbance seems to threaten. I have not found that adrenalin acts as well as the nitrate of silver. In cases in which there is much diarrhea I use a powder of pepsin five grains, bismuth subnitrate fifteen grains, soda bicarbonate fifteen grains and powdered opium one-sixth grain, and repeat this powder after every second movement. I do not recall ever having used the powder more than twice in twenty-four hours or more than one-half dozen times in the same patient. Abdominal distention has been a rare exception in my cases, but when it has been present has seemed readily to yield to the use of turpentine stupes externally and ten to fifteen drops of spirits of turpentine internally, three or four times in twenty-four hours. In convalescence, and sometimes even in the third week of the disease, quinine in 5-gr. doses twice or even three times in the twenty-four hours seems to act as a good tonic. More especially is this true in cases which have previously had a distinct malarial history.

On the question of antipyresis there is much to be said, and yet I believe that the experience of those who have had most to do with typhoid fever is fairly unanimous in support of the proposition that the coal-tar products used with any degree of frequency do more harm to the heart muscle than would the temperature. It is comparatively easy to reduce the temperature by any of the many coal-tar products, but it is not so easy to restore tone to the heart muscle and to the intracardiac ganglia after they have been assailed by such cardiac depressants. Consequently I may say that practically I never use the coal-tar products in the reduction of temperature; and while we do not always, by either the tub bath or the sponge make any material change in the temperature, in fact, frequently a slight rise will follow the bath, although this is later followed by a fall in temperature, we do make a decidedly favorable impression upon the nervous system and upon the skin, we do furnish added water for the system to consume, with increased elimination of waste products both by the skin and by the kidneys, and do in a measure hold in check the advance of temperature.

My experience with the Brandt method has not been as satisfactory as with sponging. There are many reasons for this. Some patients are much disturbed by being lifted out of bed into the tub, others are quite as much disturbed even where the tub is made in the bed itself. Some patients cannot even stand cold sponging, and in this case we are forced to use the tepid sponge. Indeed, in many cases the tepid sponging seems to be as efficacious as any other kind, although in high temperature cold sponging is much to be desired, and where well borne seems to give much better results.

Returning to our original proposition that fever is a necessary part of the disease and that a certain type in a general way characterizes the dis-

ease in the first, second, and third weeks, we have upon this presumption for a number of years reduced our sponging to a matter of system which can be very easily presented in a few words.

For temperatures up to and under 102° F., tepid sponging twice a day; up to and under 103° F., tepid or cold sponging three or four times a day. Up to and under 104° F., four times a day, and over 105° F., every two or three hours.

I may add here that when I use whisky I give it after the bath, not before. In the individual case I may use whisky less frequently, and in children when I use it at all I do so in one or two teaspoonful doses.

In the treatment of the complications we must follow the lines indicated by our own experience, remembering that we have the typhoid poisons to deal with in addition to the complication itself. In one case that I recall a very severe pleurisy came on during convalescence when the patient was almost ready to leave the hospital, the pleuritic fluid giving always the Widal reaction. The pleurisy gave us more trouble than the typhoid, but eventually the patient made an excellent recovery. In this case a withdrawal of a considerable quantity of the fluid was necessary for the patient's comfort, but in another case if we found that we could make any impression upon the pleurisy without the use of the aspirator we should not be inclined to enter the chest cavity.

I am not, however, inclined to take up the question of complications, as it is an entirely independent subject.

In conclusion, we can thus summarize:

First—Fever is a necessary part of the disease and varies according to the week in which it occurs.

Second—We cannot change the type although we may control the fever.

Third—The use of coal-tar products for the reduction of temperature is seldom if ever desirable, but the use of water externally and internally is a necessary part of the treatment of the disease.

Fourth—Nutrition must be liquid and must be adapted to the individual case.

Lastly, medication plays a very small part in the management of the disease and is only used to meet special indications.

EXTRAUTERINE PREGNANCY—SOME OBSERVATIONS IN A CASE RUPTURED BY EXAMINATION.[1]

BY W. L. WALLACE, M.D.,

OF SYRACUSE, N. Y.

PRIMARY extrauterine pregnancy is classified according to its location in the tube. The common variety is situated in the dilated outer portion and is called *ampullar*. Much less common is the *isthmial* variety, situated in the narrow inner portion, near the uterus. A third variety occurs in the portion of the tube passing through the substance of the uterus, and is therefore called *interstitial*. If the extrauterine pregnancy changes its position or condition by rupture or further development, it is called a secondary extrauterine pregnancy; thus, following the ampullar and isthmial varieties, we have the tubal mole and tubal abortion, the tubo-abdominal or abdominal, and the intraligamentary varieties.

Kelly had 23 cases of extrauterine pregnancy in 1,000 celiotomies reported in 1898, and others have reported a higher ratio. In 300 celiotomies, I have had nine cases, as follows: One double ampullar, ruptured on right and unruptured on the left side; three ampullar, ruptured; one ampullar, unruptured; two tubo-abdominal, probably secondary to ampullar; one isthmial, ruptured; one interstitial.

The interstitial variety is rare, Martin observing only one case in seventy-eight. It is situated in the cornu of the uterus, overlapped by the round ligament; and the abdominal portions of the tube are not involved. It may push into the uterus and continue as a uterine pregnancy, in which case a large portion of the placenta may be left in the tube, complicating labor; or it may rupture into the broad ligament or the abdomen. According to Kelly, this variety is peculiarly liable to rupture, and the hemorrhage is generally rapidly fatal.

The following case of interstitial pregnancy was fortunate in having the rupture occur in the hospital with the operating room ready and assistance at hand:

Case I.—Mrs. D., aged twenty-four years. First seen January 5, 1904. *History.*—One child, three years old, one child thirteen months old, which had nursed until seven months old, August, 1903, when the mother's breasts had dried up. The patient menstruated regularly from the second month, the last time, October 30, when the baby was ten months old; no blood or other discharge since. December 1 she passed over menstrual time, had much nausea, thought herself pregnant; had occasional pains after December 1. Christmas day had quite hard pain for a short time, no tenderness. December 28, 5 P.M., sudden pain, severe, located around the navel, lasted all night, no faintness, patient screamed. A doctor was called, but could find nothing, and concluded that an abortion was threatened. Patient was confined to bed one week by pain and tenderness, but gradually improved. No chill, and no bladder or bowel symptoms. January 5, the patient had been up around the house two or three days; at 3 A.M. was awakened by severe pain which lasted one hour and was again severe at 7 A.M., and hard all day.

Examination.—I saw the case at 8 P.M. January 5, 1904, in consultation with Dr. Chaffee. The pallor was striking, so that the first thought was, hemorrhage from extrauterine pregnancy: but any prejudice in this direction was dispelled by finding pulse 80, temperature 98.2° F. The abdomen was not distended and not very tender. A watery discharge was squeezed from the nipples. No vaginal discharge. The uterus was very low,

[1] Received for publication April 9, 1904.

cul-de-sac bulging and very tender. I could feel no mass, and the extreme tenderness fortunately prevented any satisfactory examination.

Diagnosis.—Probable extrauterine pregnancy, in spite of the fact that there had been no irregular bloody vaginal discharge. The patient was sent at once to the Good Shepherd Hospital, in an ambulance, at 9 P.M., for further observation.

January 6, temperature 99° to 100° F., pulse 80 to 90. Leucocyte count 10,400. Considerable pain and much tenderness. January 7, condition the same, and the patient was therefore taken to the operating room at 9.15 A.M. for examination under ether. The uterus was retroverted and at the left and enlarged to the size of a four to six weeks' pregnancy; no mass could be felt at the side or posteriorly. I replaced the uterus easily, and not finding a mass concluded that we were dealing with an incarcerated pregnant uterus and threatened abortion. 9.30 A.M., patient left operating room, pulse 120. 9.45 A.M., I was called. Pulse was 180, patient perfectly conscious, recovered from anesthetic. 9.50 A.M., I watched the case five minutes while the operating room was being prepared. The pulse dropped to 140 and therefore I waited five minutes longer. 10 A.M., pulse poorer and poorer, but somewhat slower; great pallor. 10 A.M., as the patient was being placed upon the table, apparently dead, I punctured the cul-de-sac, as I could not believe that the pulse could keep getting slower with a fatal hemorrhage. Fresh blood gushed from the puncture. Abdomen was rapidly opened, without stopping for anesthetic. Patient, unconscious, gave no sign of life. Abdomen full of bright red blood. The hemorrhage was stopped, the abdomen washed out with hot saline; while the abdomen was being closed intravenous saline was given. As soon as the hemorrhage was stopped and the hot saline started, the pulse returned, and the patient commenced to show signs of pain. A few whiffs of chloroform were then given. Half an hour later the pulse was 140 and it soon fell to 128. The temperature and pulse stayed high for three days and the patient had headache. The wound healed by first intention, and by the end of a week she was in excellent condition.

Now, to return to the *conditions found at the operation.* There were no adhesions and no mass was present. I reached in and pulled up the right tube and ovary. They were normal and were dropped back. I then reached the left tube and ovary, and was surprised, as they also were normal. Dropping the left tube and ovary I reached the uterus and pulled it up into the incision. It was enlarged, as if about six weeks pregnant. A ragged rent was found in the right cornu of the uterus, large enough to hold a horse-chestnut. Chorionic villi could be seen in this cavity. The tube itself looked perfectly normal, but was entirely separated from the uterus. An artery coming up at the side of the uterus was pumping a large stream, with great force. This artery was tied, and the opening in the uterus was closed, after the ragged edges had been cut out, by an incision which extended down to the uterine mucosa, including an oval two by one inch and nearly one inch deep. The fetus was found floating in the blood.

Observations.—This case demonstrates some of the difficulties in making the diagnosis in hemorrhage. It illustrates the advantages of the saline infusion. It proves the danger of rupture by examination.

With regard to the pulse rate, this case has taught me the danger of being misled by a pulse which becomes slower even while a hemorrhage is taking place. The slowing of the pulse might be accounted for by the suddenness and rapidity of the hemorrhage, which induced syncope on the one hand, and thus lowered the arterial tension; and, on the other hand, left so little blood in the veins, that the ventricles were a longer time in filling. This slowing has not occurred in less rapid hemorrhages which have come under my observation. For instance, in an extrauterine pregnancy operated in the same hospital a few months ago, the rupture was at the middle of the tube, and while severe and protracted, was not violent.

Case II.—March 20, 1903. Mrs. J., aged thirty-two years; one child, three years old. Menstruation normal and regular until last time, which was six weeks ago; no blood since. Two days ago, when twelve days past time to menstruate, she was taken in the night with sudden pain, which has continued with great severity.

Examination.—Breasts negative; cervix soft; uterus large with a mass behind. Dr. Levy, who sent the case into the hospital, had made the diagnosis of ruptured extrauterine pregnancy, and it was evident that the woman was bleeding. Her husband, however, refused to allow an operation to be done until twelve hours later, by which time he himself could see that she was dying. The pulse *gradually increased in rapidity all day,* until, when we operated, it was 200, and imperceptible at the wrist.

While writing these notes, we have had another experience. February 10, 1904, with hemorrhage in extrauterine pregnancy; a typical case, tubo-abdominal, in which primary rupture must have occurred during December at eight or ten weeks.

Case III.—Mrs. E., aged thirty-three years; three children, eight, five and three years old. Menstruated regularly; the last time October 10, 1903. In November was two weeks late, and flowed much less than usual, and has since had irregularly a dark, bloody discharge. The patient had very sharp pain a few days before Christmas, was tender and faint, and has since had several attacks of severe pain with faintness, and on December 29, fainted away. Has become very anemic. Temperature has been found 98 to 101° F., and pulse 90 to 120. No nausea or chill. Has had much vesical irritability, and believed herself pregnant. Examination February 9 revealed fluid in the breasts; color of vulva normal; cervix very

soft, with a large mass behind and at the right of the uterus. Temperature 99.4° F., pulse 100. The danger was explained, and an operation advised; but it took six hours of hard pain to make up the patient's mind. She came into the Hospital of the Good Shepherd at 3 P.M. February 10, and was operated at 4 P.M.

The patient was extremely anemic, blanched, her blood vessels seemed empty, she was greatly distended, and the operation revealed, in addition to large masses of clots of various ages, an abdomen filled with dark red blood, that must have escaped during the preceding twenty-four hours; enough in quantity to exsanguinate the patient, and undoubtedly enough to have killed her had the hemorrhage been rapid. Yet before the operation the pulse was only 120, and it did not go above 150, when she left the table it was much lower, and soon fell to 120; and her recovery was rapid.

It may happen that a patient who has had a frightful hemorrhage may have a slowing pulse or even a fairly slow pulse, depending upon the rapidity of the hemorrhage and its cessation or continuance. In a probable abdominal hemorrhage in a woman, a vaginal puncture may be advisable to settle the question.

With Regard to the Intravenous Saline.—The administration of an anesthetic and manipulation of a half hour abdominal operation, are a great strain on a patient who is in good condition, and we expect shock. But when the patient is on the verge of the grave from a rapid and severe hemorrhage, already in profound shock, gasping for oxygen, what shall we say of the prospect of giving an anesthetic and opening the abdomen?

We cannot wait for our patient to rally, for we have no right to expect the bleeding to stop, and we are obliged to proceed at once. When the anesthetic has been given ten minutes, and the arm of the operator is down to the elbow in the blood in which the intestines are floating and in which nothing can be seen; while the hand is picking out and bringing up the bleeding area from beneath the clots where almost nothing can be felt; with the patient still bleeding and having no blood to be lost, the case becomes desperate indeed and the shocked condition of the patient is terrible. She stops breathing, and the anesthetic is taken away; and the man at the pulse is wont to say, "It is of no use, pulse 150—180—gone."

However, a change occurs, for with everything in readiness, in the second that the operator has clamped around the bleeding area, the saline has been started and oxygen applied, and as the amount of saline administered is read off 200 c.c., 250 c. c., 400 c.c., the pulse begins to return and is called off 180 160 140, the respirations are gradually resumed; the change is remarkable, the operation is satisfactorily completed, and the patient leaves the table in excellent condition.

These three cases were saved by the intravenous infusion, and it would be great folly to operate for ruptured extrauterine pregnancy without being prepared to use the saline. In accident cases, with crushed limbs and injured nerve centers, the vasomotor system is paralyzed and the saline is disappointing; but in hemorrhage cases with the artery tied, the effect is magic. The flow, however, should not be started until the hemorrhage has been stopped, or the loss of blood will only be increased. And the danger of giving too much saline is great and grave, and should ever be kept before us. If the blood is too much diluted, the tendency to bleed is greatly augmented and the surfaces of adhesions otherwise harmless, may ooze profusely, prolonging the operation.

The proper amount of saline is small, for the blood pressure is soon restored. After enough has been given, fluid begins to pour out through the gastro-intestinal and respiratory mucous membranes as fast as it runs into the veins, and if continued the blood pressure rapidly falls, the lungs, liver, and other organs becoming edematous, and the patient is drowned. The old directions were to crowd the saline, giving four quarts or more if necessary, that is, if the blood pressure did not keep up, and many and many of these patients were said to die in spite of four quarts of saline.

Crile[1] has shown the good and bad effects of saline infusions. In his experiments on dogs, although some were saved when a large amount of blood had been withdrawn and a large amount of saline introduced, especially when oxygen and artificial respirations were used, yet, in the average case, a fatal dose was found to be very small, about 6 c.c. of solution to each pound weight of the animal; and the saline was found to be particularly dangerous when chloroform was used.

In these three cases of hemorrhage from extrauterine pregnancy, as soon as the pulse was full and the second sound of the heart commenced to be accentuated, the saline was stopped. Each of these patients weighed about 120 pounds and of course their veins were empty when the saline was started. They received 700 to 1,000 c.c., or about 5 to 8 c.c. to each pound of their weight. In addition, each received about one pint in the abdomen, and one quart in the rectum, for later and slower absorption.

With Regard to the Danger of Rupture by Examination.—I believe an examination in a case of extrauterine pregnancy is apt to clear up any doubt in diagnosis, as it is certainly quite liable to rupture an early case, and start up hemorrhage in one that has already ruptured.

When we look back on our cases, we see that the symptoms following the examination were striking. And when we consider the conditions found at operation, we cannot see how the most careful examination can be made without the greatest danger. When a tube the diameter of a lead pencil is bulged out to hold a lemon or an orange, it is certainly on the point of tearing. And when partial rupture has already occurred, and the mass in the tube has begun to extrude through the rent; when the hemorrhage from the torn vessels has been stopped by a tender clot being spread out over the bleeding area, only to be torn away and

[1] Problems Relating to Surgical Operations, Lippincott, 1901.

plastered up again the next day, as the mass has become larger and has been further extruded; when a rupture is so liable that the patient is often awakened from quiet sleep by the agony of another explosion, does it not seem strange that it is ever possible to make any examination without accident?

As there were no clots present in the case of interstitial pregnancy, the sudden violent pain that had occurred a week earlier must have been caused by a stretching and tearing, that had not yet amounted to rupture; but as the operation, which was performed one-half hour after examination, found the abdomen full of red blood, we must conclude that the pregnancy was ruptured by the examination.

The first case, used in illustration, had commenced to rupture two days before the examination; possibly the clots found at operation had temporarily stopped the hemorrhage. However this may be, she certainly had bled from the time of the examination until the operation, and it would seem impossible that any reasonable examination could have been made without breaking up such soft clots as were present.

The other case had ruptured two months earlier, and was continuing as a tubo-abdominal pregnancy. The diagnosis was plain, but the patient refused to go to the hospital. However, during the next few hours after a most careful examination, so much pain and soreness were experienced, that the patient herself soon became anxious for the ambulance.

Being always so dangerous, it is of the greatest importance to recognize extrauterine pregnancy, and when in doubt it would be better if necessary to have the examination produce a little hemorrhage and clear up the diagnosis, rather than have the condition continue to develop. But the danger of rupture by examination ought to be remembered, and a suspicious case ought to be carefully watched for a few hours after an examination; and in a probable case, it would be much safer if the examination could be made in a hospital operating room, where a vaginal puncture and exploration could instantly clear away any doubt in diagnosis, and any necessary operation could at once be performed with safety.

A NEW BRACE FOR THE SHOULDER JOINT.[1]

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THE accompanying drawing illustrates an apparatus which I devised some time ago for a case of tuberculous shoulder-joint disease. It is very simple and can be made by any brace-maker. It permits motion and use of the fore-arm, and restricts motion of the shoulder in every direction except rotation—the least harmful of all motions of the joint. It was devised for a case that had lasted a number of years and had undergone operation several times, and, after the lapse of about one year, appears to have cured the disease.

The brace consists of a belt of canvas three or four inches wide which encircles the chest just

below the axillæ, and laces in front. A similar belt encircles the arm. These two belts are joined by two flat, arching metal rods, in front and behind, on whose inner ends are riveted metal plates to prevent twisting of the thorax girdle. Finally the thorax band is provided with a pair of suspenders to prevent sagging.

The latest use I have found for this brace was in a case of recurring dislocation, but the patient, a bartender, found that it restricted the motion of his arm too much, and soon gave it up.

451 West End Avenue.

[1] Received for publication May 27, 1904.

THE EARLY DIAGNOSIS OF POTT'S DISEASE.[1,2]

BY FRANK P. VALE, M.D.,
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THE best way to avoid overlooking Pott's disease, is to keep constantly in mind the possibility of its existence. Within a few months two cases have come under my notice in which, even at an advanced stage, the affection had not been recognized, though both presented the typical angular deformity which could have been immediately identified. When the disease gives us such unmistakable evidence of its presence there can be no possible excuse for a tardy diagnosis; yet no less an authority than Sir Frederick Treves, in a recent article in *The Practitioner* (London, 1903, p. 1), relates that he opened the abdomen of a patient with persistent gastric symptoms, only to have his attention called a few days after the unsuccessful exploration, to a "hump" on the back, which the nurse had accidentally discovered. And in both of the cases I have referred to, the clinical history should have brought Pott's disease to one's mind.

[1] Read before the Medical Society of the District of Columbia, March 30 1904.

[2] Received for publication March 28, 1904.

The first case was that of a male, aged thirty-five years. His chief complaint, when he came to me, was the loss of the use of his arms. Ten months before he had been thrown from his horse in stopping a runaway. For two weeks following the accident he had sharp pains between the shoulders. They then disappeared for a short time, only to reappear with renewed vigor. The loss of power in his arms began about three months after the accident. He was then easily exhausted; often it was necessary for him to get off his horse and lie down on the side of the road, thus obtaining relief from his pain. Three or four months later he began to suffer with an oppression and pain in the chest, especially on exertion. At times he could not hold his head up and would have to support his chin with his hand. His voice became husky, and his respirations wheezy, and about this time a diplopia developed. An examination of his back revealed, at the cervicodorsal junction, a well-defined projecting knuckle. An interesting fact was the history of a localized tuberculosis of the testicle, four years before—also of traumatic origin—which had necessitated removal of the organ. Twice then he had developed a localized tuberculosis following an injury, but had never shown any other tuberculous manifestation.

The second case was that of a young man of twenty-three years. His first symptoms dated back four and one-half years. He would often stumble and soon noted some weakness of the legs. His gait was so unsteady he was frequently accused of drinking to excess, and such reports came to the ears of his parents. From that time there has been a progressively increasing paraplegia. It is almost inconceivable that during all this time his back has never been examined. The pains in his legs had been called rheumatic; when he came to me he complained especially of severe pain over the crest of the left ilium. The final heroic effort in his behalf had been made a short time before. He was circumcised with the hope of curing the loss of control over his bladder and rectum. His appearance proclaimed a grave malady. His paraplegia had reached the point where he could hardly walk; in fact, for a year he had only been able to walk with his bicycle beside him for support. I was almost certain of what I would find before I had him strip—and there was the characteristic deformity in the middorsal region. Two months in bed, and a plaster jacket worn since for four months have nearly restored his limbs to their normal condition.

But certainly with regard to these advanced cases we only need have our attention directed to the possibility of such errors, to sufficiently profit thereby. The recognition of the disease before this unfortunate deformity occurs gives us most concern, and is the matter of vital importance.

As an illustration of the disease at this earlier stage I present the case of a nine-year-old boy. When I first saw him it was stated he had been ill but ten days or two weeks. From his appearance one knew at once he was seriously sick. His sole complaint, however, was of pain in the stomach. He had always seemed perfectly well except for the apparently insignificant fact that for as much as two years he had at times complained of this pain. But as far as his mother's observations go his illness dates back not more than two weeks.

On examining the back there was no deformity or local tenderness. Partially supporting the weight of his body with my hands under his arms he volunteered the information that his stomach pain was relieved. In picking up an object from the floor his movements would hardly attract attention—there was no effort to support his weight with his hands on his knees, the rigidity of the back muscles simply prevented any arching of the spine. He hesitatingly jumped from a chair to the floor, but said it caused him no pain. Placing him face down on the examining table one could raise the thighs and pelvis and produce almost as extreme a flexion as normally, but when this was carried beyond a certain point he complained of exaggerated pain in the stomach. There was no psoas spasm. Lateral pressure on the ribs did not cause pain. He walked with his toes slightly turned in, and carried his shoulders thrown back and elevated. His abdomen was somewhat prominent.

Had a doubt existed as to the diagnosis it would have been removed by the radiographic appearances to be referred to later. The diagnosis has been confirmed by the further progress of the disease—though there is no deformity present, and I anticipate the disease will run its entire course without the appearance of any; a careful palpation in the middorsal region now reveals a very slight prominence of three spinous processes, and a little greater interval between them than is noted just above and below. The results obtained by the plaster jacket applied are also amply confirmatory, for without any other therapeutic measure being adopted the patient was immediately relieved of his pain, and has entirely regained a healthy appearance after an interval of two months. For two weeks, while his present removable jacket was being made, he wore one of plaster, which had been slit up the side and insecurely fastened, with the result that there was a return of the pain.

This history of abdominal pain is a characteristic one. We find it referred to even in the original paper of Pott in 1799. He says: "And soon the patient complains of frequent pains and twitchings in his thighs, and of an uneasy sensation at the pit of his stomach." About fifty years ago Benjamin Lee (*Angular Curvature of the Spine*, Philadelphia, 1867) especially emphasized epigastric pain as an important, early and characteristic symptom of spinal caries. "This pain," he writes, "is almost invariably the first symptom of the commencing caries, or of the inflammation of the periosteum or intervetebral cartilage which precedes the caries. In nine cases out of ten the disease is ushered in by attacks of gastralgia. The

length of time during which the patient suffers from it before the ulcerative process has destroyed enough of the bone to produce actual and unmistable deformity is variable, but it has been noticed not infrequently six months, and in some cases an entire year previous." In this boy there had been attacks of epigastric pain for two years, but it had received no attention until his appearance suggested there was something seriously wrong with him.

Pain at the site of the disease, however, is not significant or constant, but, on the contrary is referred to the area of distribution of the spinal nerves taking their origin in the affected region, producing these characteristic gastralgias when the disease is located in the middorsal vertebræ; the pain being referred to the rectum, bladder and lower limbs when the lumbar vertebræ are involved, and to the arms, chest and occiput when it is the cervical vertebræ. Pain in the back then, is a symptom frequently inquired for, but usually absent. But any peripheral pain, which does not yield to ordinary measures, should cause the spine to be carefully examined.

In some cases all pain is entirely absent, and the general impairment of health—which the physician is at a loss to explain—may be the only evidence of the slumbering inflammatory process. In rare instances, without either pain or marked impairment of the general health, the disease may progress to the stage of deformity without attracting attention. Even in the early literature of the disease we find mention made of this. Sir Benjamin Brodie (*Diseases of the Joints,* London, 1818) described "A case in which the patient had made no previous complaint, immediately after a slight exertion experienced a sudden pain, as if something had given way in the back, and at once lost the use of her lower limbs, and observed that the spinal process of one of the lumbar vertebra made an angular projection." Large abscesses formed, and she soon died.

Local tenderness on percussion, and sensitiveness to heat or cold, are signs to which diagnostic importance have been attributed since the earliest descriptions of the disease. James Earle, a contemporary of Pott, said (*Observations on the Cure of Curved Spine,* London) in 1799: "If suspicions are directed toward the back, the seat of the mischief may often be discovered by pressure with the fingers, or with the knuckles, gently on each vertebra, singly one after the other." Local sensitiveness to heat was first mentioned by Copeland in 1815 (*Treatment of the Diseased Spine*). He discovered it accidently, he writes, in applying a moistened sponge to the spine, and cites a case in which, by the aid of this symptom, he recognized the disease before the occurrence of deformity. But the rapid cure obtained by his application of "caustic issues" causes one serious doubt as to the accuracy of his diagnosis of spinal caries. Even in our twentieth century text-books, especially those from German authors (Hoffa, Mueller, David), we find these signs enumerated, though I express my own skepticism as to their value. A modern modification, to which they also refer, is that suggested by Rosenthal and Seligmüller—the sensitive spot being sought by the aid of the galvanic current, with the cathode in the epigastrium and anode applied along the spine.

Jones and Ridlon in a series of contributions to orthopedic surgery (*Provincial Medical Journal,* November, 1892) thus express themselves on this point: "There seems to be an almost universal belief among the profession, and this belief has been fostered by nearly all teachers and writers on general surgery, that the most early and constant —in fact the diagnostic—symptom of spondylitis is tenderness on pressure over the point of disease. There is no lack of knowledge as to the pathological anatomy; it is perfectly well known that the lesion is confined to the vertebral bodies and usually to their anterior portions. It is therefore quite impossible that there should be tenderness over the spine or transverse processes. Unless, then, there be disease of the processes or laminae, an exceedingly rare condition; or unless an abscess, which will not be readily detected by palpation, be present, tenderness on pressure will not be found in spondylitis. In a doubtful case its presence must count as an important symptom against true spondylitis."

In the early diagnosis of this disease the symptom of greatest value, the first to appear and the last to disappear, is muscular spasm. The same condition exists around chronically diseased joints of the extremities. This muscular rigidity is nature's method of limiting motion, relieving pain and insuring rest. Rest is nature's panacea; with the fluoroscope look through a chest at the lung acutely involved in a tuberculous process, and you see evidence of the same effort at repair through rest—the diaphragm on the affected side is almost fixed, its respiratory excursions practically nil.

This muscular spasm shows itself in different ways according to the region of the spine involved. In cervical caries it often produces "wry-neck." If suspicion is fortunately directed to the spine, one is confirmed therein by the relief obtained from extension applied to the head with the patient in bed. If one does not keep spinal caries in mind, unsuccessful tenotomies are sometimes performed. In young children, in the absence of wry-neck serving to attract attention to muscular rigidity if cervical disease is suspected, place the little patient across your knees and, to again quote Jones and Ridlon, "if the disease exists the child will not let the head dangle, no matter how prolonged the examination may be."

In the lumbar region the mild lordosis seen in early cases is in part the result of muscular contraction, *i.e.,* psoas contraction—throwing the spine forward and necessitating the shoulders being thrown back—though in part voluntary, the patient naturally favoring this position as it takes pressure off of the diseased vertebræ. This

lordosis produces a prominent abdomen, which may be one of the first things noticed. Contraction of the psoas muscle at times produces a slight limp, or a sliding gait. With the patient face down on the examining table and the pelvis fixed, this spasm of the psoas is shown by one's inability to raise the knee the normal two or three inches from the table. This contraction of the psoas, flexing the thigh and limiting its extension, often leads to a mistaken diagnosis of hip disease. It has been seen so great as to necessitate the child walking on "all fours." With the patient prone, any rigidity also of the spinal muscles, even of the upper dorsal region, can be readily appreciated, by estimating the flexibility of the spine in raising the feet and pelvis from the table. In health this can be carried until the thighs are nearly at right angles to the back. Probably the best way to demonstrate any abnormality in the regular contour of the back, or limitation of its flexibility, is to have the patient stoop, or bend the body forward as far as possible while in a sitting position. The usual test is to have the patient pick up some object from the floor; the body will bend from the knees and hips, while the spine is held rigidly erect. In fact the rigidity of the back muscles is shown in every movement made.

There is one other effect, at least in part due to spasm of the back muscles, and that is diminution in the patient's height, which may be considerable even in the absence of deformity.

Paralysis of both legs, less frequently the upper extremities, may be the first symptom noted, at times antedating the appearance of the deformity several months. This "palsy" of the lower limbs was the one symptom which first led Pott to make a study of the disease. He says: "When the disease attacks a child who is old enough to have walked properly, its awkward and imperfect manner of using its legs is the circumstance which first excites attention, and the incapacity of using them at all, which very soon follows, fixes the attention and alarms the friends. . . . He at first complains of being very tired, is languid, restless and unable to move much, or at all briskly, for no great length of time. After this he may be observed to trip and stumble, although there is no impediment in his way; and whenever he attempts to move he finds that his legs involuntarily cross each other, by which he is frequently thrown down, and that without stumbling; upon endeavoring to stand still and erect, without support, even for a few minutes, his knees give way, and bend forward. When the disease is a little further advanced, it will be found he cannot, without much difficulty and deliberation, direct either of his feet precisely to the exact spot, and very soon after this both thighs and legs lose a good deal of their natural sensibility, and become perfectly useless for all purposes of locomotion."

If this disease is very liable to be overlooked in adults, how much more is this likely in children who cannot explain their ill feelings. Pott's statement that: "When the disease attacks an infant of only a year or two old, or under, the true cause is seldom discovered until some time after the effect has taken place" is about as true to-day as it was then. Paralysis is shown in an infant only by the loose, flaccid manner in which the limbs lie, though the way it climbs to a sitting posture by seizing the edge of the crib might attract attention. The child lies quietly, if undisturbed, but cries at the slightest touch or the approach of any one.

In the examination of infants, Sayre was in the habit of taking the child across his knees and in separating them note the effect of the slight traction thus made—pain and difficult breathing often disappearing in a significant manner. It was Sayre who pointed out that in the dorsal part of the spine the sides of the vertebræ are primarily and most extensively involved. Lateral pressure on the ribs so as to force their heads against the facets produced pain, which he regarded as a valuable diagnostic point.

Waterman and Jaeger (*New York Medical Record,* November 9, 1901) after a study of a thousand cases on the record books of the New York Hospital for the Ruptured and Crippled, state that the first symptom noticed in infants and children under five years of age, was an unnatural attitude. Gastralgia, night cries and progressive weakness were the next most common first symptoms, while grunting respiration, inability to walk, and abdominal protrusion were present in but a very small number.

In disease of the upper dorsal vertebræ the chin is raised "suggesting the position of a seal's head when out of water" (Bradford and Lovett). In caries of the middorsal spine the shoulders are elevated and thrown back, thus relieving the bodies of the diseased vertebræ from pressure and aiding in the fixation of the spine. The patient walks with toes slightly turned in so as to prevent the heels from striking, and with more weight on the toes than on the heels, the better to prevent jarring of the back. In cervical caries a favorite attitude for the child is with its chin supported on its hands and elbows on a table or on its knees.

In this early case of Pott's disease I have brought before you the X-rays were a factor in confirming the diagnosis. The radiograph shows the space between the eighth and ninth dorsal vertebræ nearly obliterated. Superimposed on the cardiac shadow there is a fusiform shadow jutting out from the spinal column from the seventh to the tenth vertebræ, quite marked on the left side but less distinct on the right. It outlines the inflammatory exudations at the site of the disease.

It is surprising how little has been written on this subject of the X-ray appearances in early Pott's disease. Every one is agreed upon the difficulty attending the recognition of the disease before the appearance of the deformity, yet the references in medical literature to the value of the X-rays in this connection can be counted on

the fingers of one hand. In an article on the cure of spinal caries without subsequent deformity, by Royal Whitman, in the *Transactions of the American Orthopedic Association,* 1901, p. 359, is a cut showing the X-ray appearances in a case of early lumbar caries. Redard and Loran in 1898 at the Twelfth French Surgical Congress, p. 228, spoke most enthusiastically on this subject. In many of their observations an X-ray examination enabled them to establish the diagnosis of Pott's disease in its earliest stage, when the subjective and objective symptoms were not enough by themselves to justify it. Their plates showed the number of vertebræ involved, extent of lesions, loss of substance, existence of sequestrae and tubercular cavities.

Kirmisson, another French orthopedic surgeon, writes the only other paper on the subject of which I have any knowledge (*Revue d'Orthopédie,* 1901, p. 405). The X-ray appearances in this boy correspond exactly with those described by him. He writes: "It is especially in the dorsal region that radiography furnishes the most precious information. In the lumbar region, in docile children, deep palpation of the abdomen. enables one to recognize, at times, without great difficulty, existence of caseous masses in front of the vertebral column, at times even small abscesses still distant from the anterior abdominal wall. In the dorsal region it is not the same, and neither palpation nor careful percussion enables one to affirm the existence of an abscess. There is here, unfortunately, an anatomical fact which is inconvenient in the appreciation of the results furnished by the X-ray negative—the presence of the cardiac shadow. However, one readily learns to recognize the characteristic outline of this latter; and further, even when the cardiac and Pottic shadows are superimposed, one on the other, the shadow due to the vertebral lesion generally being the more pronounced. One is able to recognize the fusion of several vertebral bodies by the disappearance of the clear intervals corresponding to the intervertebral disks. and to see that the vertebral column is often surrounded by a more or less round or fusiform exudation which juts out from each side of the vertebral bodies. This fact is *en rapport* with that remarked by all observers occupied with the pathological anatomy of Pott's disease—that clinically a good number of patients have no abscess; while on the contrary, when one has occasion to make anatomicopathological studies one is struck to see that in reality the majority of cases of Pott's disease are accompanied by suppuration."

I may add to the remarks of Kirmisson the well-known fact that in early cervical caries it is often extremely difficult to differentiate the muscular spasm associated with this condition from that of true muscular wry-neck, and, as a last word, enter a plea for the more frequent use of the X-rays, in connection with other diagnostic methods, in one's efforts to recognize spinal caries at an early date.

MEDICAL PROGRESS.

OBSTETRICS AND GYNECOLOGY.

The Apostoli Treatment.—The value of this method of treating uterine fibroids by electricity was hotly contested in medical literature some years ago and a sufficient length of time has now elapsed to permit of dispassionate conclusions. G. B. MASSEY (*Jour. Am. Med. Ass'n,* May 21, 1904) reports the results he has obtained with the method during the last sixteen years in a total of 110 cases. Excluding nine cases where the results are unknown, the remaining patients which could be reached by various methods of inquiry, were found to exhibit 75 actual or practical cures, and 26 failures. In other words, three-quarters of the cases were successes and one-quarter failures. The latter term was made to include those cases where the patient was left in a condition the same as before treatment, and in a position to accept operative removal if necessary or desirable. In 18 instances the tumor had totally disappeared, although not all these cases were verified by the author. He concludes that we expect a cure in three-quarters of all the cases subjected to the Apostoli treatment, as attested by inquiries made from three to sixteen years after cessation of treatment. The cases that respond poorly, or not at all, are not harmed by the treatment when properly applied, and heroic measures may then be adopted with the certainty that milder ones are of no avail. Hemorrhagic and interstitial fibroids are best adapted to the method, while subperitoneal or degenerative fibroids, and those complicated with pyosalpinx are least adapted to be relieved by it. Among the author's patients there were seven deaths during the sixteen years they were under observation, and only one of these was due to the progress of the growth itself. Of the others, four died while being operated, one of an intercurrent disease and the other of septicemia.

Urea in Puerperal Eclampsia.—Since the test for albumin in pregnancy has at times proved unreliable, an estimation of the quantity of urea excreted has been generally accepted as a sure indication of threatened eclampsia. But even this has come to be regarded by some as an overrated danger signal and the favorable termination of cases where the excretion of urea was far below the normal has led to a closer study of the subject by F. S. CLARK (*Cleveland Med. Jour.,* April, 1904). In 38 cases, with a total of 140 examinations, the highest percentage of urea excreted was 2.5 per cent. and the lowest 0.2 per cent., the average being 0.99 per cent., which is low as compared with the supposed normal amount. The average in weight was 13.57 grams. With three exceptions all the cases were free from suspicious symptoms, and in only one of these did eclampsia actually come on. It seems, therefore, that a diminution in the quantity of urea excreted during pregnancy does not signify that eclampsia is threatening. For this reason, if other conditions are normal, a systematic examination for urea is of no value and cannot always be depended upon, even in cases where other conditions are abnormal. It is true that such a small number of cases would give very inaccurate conclusions if it was attempted to establish the positive value of examinations for urea, but it does not require a large number of cases to establish the negative value of this factor. The author believes that it would not be right to put patients on a strict anti-eclamptic diet, when there is no other symptom than a decrease in the quantity of urea excreted. He still thinks that the presence of albumin is the best guide

for estimating the chances of an eclamptic attack coming on, and as the quantity may be very small, he suggests making two tests of each specimen. If it is then found only in traces, a microscopical examination should be made. The tests for urea only are of value when other symptoms of intoxication are present.

Treatment of Retroversion During Pregnancy.—The chief reason why this condition requires immediate and careful treatment is that unless the displacement is corrected it may result in cystitis; ascending pyelitis and death. It is commonly said that retroversion of the gravid uterus often results in abortion. This the author, G. Ernest Herman (*Brit. Med. Jour.*, April 16, 1904) disbelieves. In his opinion when the uterus has become large enough to be incarcerated under the sacral promontory, the period of abortion is passed and the danger to the patient lies not in the possible loss of her child, but in infecting herself secondarily through retained urine. Many of the retroversions which have gone on to miscarriage, have done so through rough handling in the attempt of practitioners to replace them. Busch, out of 74 cases found that in 69 the uterus spontaneously righted itself. Of these only four aborted or one in seventeen. Charles has analyzed 138 cases. In eight of these abortion was induced. In 88 the displacement was forcibly reduced, either manually or instrumentally, and in 11 of the cases abortion took place. Charles reports abortion in 37 of his 138 cases, including those which were induced. Of the 39 who spontaneously aborted, no less than 20 died. In St. Bartholomew's Hospital from 1881 to 1892, inclusive, 42 cases of pregnancy complicated by retroversion were treated. In 41 the uterus was incarcerated and was causing retention. In 25 the bladder was emptied and replaced. In ten cases the catheter was frequently used and the uterus spontaneously righted itself. The clinical side of this condition shows that the whole danger of retroversion of the gravid uterus in the fourth month comes from the tendency of the condition to cause retention of urine. The organ itself is probably not in the least injured. The one solitary treatment for the condition is the free use of the catheter. This, if used in time, is sufficient to relieve all symptoms. Keep the patient recumbent and the bladder empty, and in 90 per cent. of the cases the organ will right itself.

Primary Sarcoma of Vagina in the Adult.—Primary sarcoma of this organ is a very rare condition; this being the thirty-ninth case recorded. Henry Jellett (*Medical Press*, April 20, 1904) reports the case of a woman, fifty-five years of age. He believes it to be the only case on record as having occurred in Ireland. She had nine children, the last pregnancy being eleven years ago. Menopause five years before. Two years ago she noticed the occurrence of a profuse white discharge which persisted a half year and then became purulent. She lost weight and presented the usual evidences of malignant cachexia. On physical examination anteriorly a curious flap existed beneath the orifice of the urethra. The whole of the vaginal wall was profoundly involved, but the parts were remarkably insensitive. One of the small bosses at the junction of the posterior and lateral wall was removed for microscopical examination. The removal of the growth was undertaken because it was eventually shown to consist of a round-cell sarcoma. The injection at a half-dozen points of a few minims of a 1 to 5,000 solution of adrenalin rendered the operation comparatively bloodless. The urethra was then dissected out and the terminal portion removed. The whole vagina was then completely surrounded by a circular incision and the growth was removed one-third way up the vagina. The vaginal wall was again circularly incised well above the growth and the upper and lower edges were approximated very much as in a Whitehead operation for hemorrhoids. The recovery of this patient was uneventful. The tumor proved to be an example of infiltrating sarcoma, the rarer of the two varieties met with in the vagina, the more frequent being the spindle celled. An admirable photograph of the condition is appended.

Rupture of the Uterus.—The following valuable conclusions are presented as the result of his own experience and the careful study of 50 cases reported in the literature by A. N. Dorland (*Medicine*, June, 1904). He divides the cases into fatal untreated, expectant without operation, and those treated by operation. He believes that incomplete lacerations of the uterine wall, if the hemorrhage be moderate and the diagnosis accurate, may be well treated by careful vaginal and intrauterine tamponade. Complete lacerations with invasion of the peritoneal cavity, should, under unfavorable circumstances, such as uncleanliness of locality and lack of surgical appliances, be temporarily treated by intrauterine tamponade and the administration of astringents and stimulants; the patient should then, if possible, be conveyed to some hospital and the abdominal cavity opened. Under favorable circumstances the cavity should be opened as speedily as possible and the rupture in the uterine wall sutured in suitable cases, or a Porro operation or a total extirpation be performed, according to the nature of the case. The general mortality was 24 per cent.; that with expectant treatment, 25 per cent.; and the operative treatment presented a mortality of only 16 per cent.

Rupture of the Fetal Membranes Without Terminating Pregnancy.—This accident assumes two forms the amnion alone may be ruptured and the fetus remain within its folds, or both chorion and amnion be torn and retracted from about the fetus, which then lies free in the uterine cavity. This subject has been studied by H. Meyer-Ruegg (*Zeitschr. f. Geb. u. Gyn.* Vol. 51, No. 3) who reports two cases of this obstetrical complication. In the twelve instances of rupture of the amnion alone thus far reported, the pregnancy continued to term, but only one of the children escaped without injury, the remainder being subjected to amniotic adhesions which resulted in amputations. In fifteen cases where both membranes were ruptured, pregnancy also continued to the sixth to eighth month. In eleven cases the fetus assumed the breech position. The opening in the membranes was always small and no inflection resulted. The expansion of the chorion frondosum was less in extent than that of the serrotina, and a marginal implantation of the placenta resulted. The prognosis for the child in these cases is always bad. The only reliable symptom of the condition is a hydrea, but which, during the early months, must be distinguished from the discharge due to an endometritis. No definite recommendations are made as to treatment.

Version in Primiparae with Narrow Pelves.—In special cases where a primapara presents a flattened pelvis, P. Broese (*Zeitschr. f. Geb. u. Gyn.*, Vol. 51, No. 3) recommends deep perineal incision extending into the cervix, followed by extraction. If version is difficult, he employs the following manual procedure. The hand is introduced between the head and the uterine wall with the volar surface turned toward the child. Strong traction is then made on the foot with

the other hand, and the head readily slides over the hand into the cavity of the uterus without boring into the cervix. He reports ten cases treated in this manner, with eight living children, the other two dying of cranial injuries shortly after birth. Other means had failed and perforation would have been indicated. The incisions are carried in the direction of the ischiorectal fossa, on either side of the rectum toward the tuber ischii. They must be carefully repaired after extraction and in every case presented, healed by primary union, and did not interfere except in one instance with subsequent labors. The operation is distinctly limited to cases where the diagonal is at least 10 cm., otherwise abdominal section or perforation in advanced cases, is indicated.

Effect of Escharotics on the Endometrium.—A very satisfactory insight into the question as to the actual value of the application of escharotics to the interior of the uterus is afforded by the investigations of A. RIELANDER (*Zeitschr. f. Geb. u. Gyn.*, Vol. 51, No. 3). In four cases of intended hysterectomy for atheroma of the vessels producing severe hemorrhages or for retroflexion with fixation, he was able to apply the various agents some twenty-four hours previous to the radical operation and then to study the effect on the extirpated organ. He found that alcoholic solutions of a remedy are to be preferred as they are distributed more readily over the surface and penetrate to a greater degree than those of an aqueous character. Playfair's sound is sufficient for all purposes. The uterine mucosa is easily penetrated by escharotics, but the more compact muscular layers offer a marked resistance. The aqueous solutions penetrate very slowly, the alcoholic more rapidly. The application of a 30 per cent. alcoholic solution of formalin is followed by a throwing off of the scab within twenty-four hours and then the regeneration of the mucous membrane begins at once. Although the attempt was made it was impossible to affect, in any way, the mucosa of the tubes by the applications carried in on the Playfair sound, and the author doubts whether the reported cases of the latter procedure can be confirmed.

THERAPEUTICS.

Marmorek's Antituberculous Serum.—The claims of the originator of this preparation have been conservative. He states that if investigators find, as he believes he has been so fortunate as to do, that the serum does no harm in any case and in a few chosen cases enables one to ameliorate the symptoms and diminish the extent of the ravages of the disease, any physician is justified in giving the serum a trial. ARTHUR LATHAM (*Lancet*, April 9, 1904) states that he was so fortunate as to have the advantage of a visit from Dr. Marmorek on three occasions at the Brompton Hospital for Consumption, and that through his courtesy he was enabled to give the serum a rather wide trial. The technic of giving the injections defers more or less to the fancy of the patient, except that in surgical cases, it is probably advantageous to give the injection somewhere in the neighborhood of the lesion. A very excellent plan to adopt is the covering of the selected area with cyanide gauze and contenting oneself for each subsequent injection with a swabbing of the skin with some antiseptic before using the needle, too extensive preparation tending to produce a very irritating dermatitis. The author has given over 415 injections in this way without any accidents. The puncture should always be closed by collodion. The time of the injection is preferably between nine and eleven o'clock in the morning. The effects of the serum, as immediately observed, are probably attributable to the "horse" in the serum and not to the antitoxin. The idiosyncrasies of certain individuals are as marked in reaction to the preparation as they are in any other serum. The rashes differ in no way from the ordinary serum rashes. They typically occur after three or four injections. The antitoxic effects of the serum are not yet definitely proven. It is, however, already clear that the serum has its limitations. These are found prominently among the older cases, although even in this class the patients have invariably expressed themselves as feeling more comfortable from the treatment. The author concludes that the serum does produce a distinctly antitoxic effect. He believes it to be specifically curative in some of the recent and less severe forms of infection. It must not be forgotten, however, that this treatment must be carried over a long series of months in order to obtain any definite results.

A New Salicylic Acid Preparation.—The desire to put on the market a preparation of salicylic acid which is readily absorbed by the skin, has led to the manufacture of salit, an oily, unsoluble fluid which is readily split up in the body into salicylic acid and borneol. P. MÜLLER (*Münch. med. Woch.*, April 12, 1904) rubs a teaspoonful of a 50 per cent. solution in olive oil twice daily over the affected spot. Muscular rheumatism, acute neuralgia, mild acute polyarthritis, acute pleurisy and acute tendovaginitis were influenced most favorably; some improvement followed in severe polyarthritis, chronic rheumatism and neuralgia and tuberculous pleurisy, while gout and erysipelas were not affected. After-effects were not noticed, but in patients with delicate skin an itching eczema sometimes appears.

Treatment of Hay Fever.—E. FINK (*Therap. Monatshefte*, April, 1904) criticizes strongly the antitoxin treatment of hay fever and looks upon this disease as a purely local process in the antrum of Highmore, caused generally by pollen. A rhinoscopic examination during an attack will invariably disclose an excessive discharge in the middle meatus and a trocar introduced into the antrum will draw off fluid. The patients are generally neurasthenics and very prone to react to slight stimulation. Secondary symptoms such as conjunctivitis and asthma are merely reflex disturbances. The most satisfactory treatment is the application of aristol directly to the mucous membrane of the antrum by means of a thin canula. Six or seven applications are usually sufficient, but it is generally advisable to repeat the treatment every season.

Treatment of Acute Articular Rheumatism.—With reference to treatment, articular rheumatism may be divided into three classes, viz., (1) where the salicylates have a prompt and permanent effect, (2) where they merely alleviate the pain and inflammation without influencing the course of the disease, and lastly where no improvement is achieved. Of the many ways of giving sodium salicylate, the one by mouth is still preferred, though gastric irritation is apt to follow and the amount of drug which actually enters the circulation is certainly small. One can hardly speak of a local action in topical applications of oil of wintergreen or the more recent mesotan, since these drugs are absorbed by the lymphatics before reaching the joint structures. Subcutaneous injections are generally too painful, but a great future is promised by F. MENDEL (*Therap. Monatshefte*, April, 1904) for the intravenous application. He uses a solution containing 8 gm. sodium salicylate, 2 gm. caffeine-sodium salicylate to 50 gm. of water and injects in amounts of 2 gm. directly into the veins at the elbow. The result was most remarkable, since in all rheumatic affection the pain and swelling disappeared almost at once, even when large internal doses of aspirin had been

without effect. After-effects were slight; occasionally trifling pain is complained of at the site of injection, or the patients experience a moderate chill. Disagreeable symptoms seen after internal use, such as vertigo, profuse perspiration, nausea or renal irritation were never noticed.

A New Mercurial Salt in Syphilis.—Hydrargyrum anilinicum.—While treating a tuberculosis patient for syphilis with sublimate compresses, FEDCHENKO (*Roussky Vrach*, No. 12, 1904) happened to obtain favorable results from an accidental admixture of anilin to the sublimate, which thus formed a new mercurial salt. It appears as a very light, downy white powder, tasteless and odorless, showing under the microscope small thin crystalline rods. Its chemical formula is $Hg(C_6H_4NH_2)_2$, thus containing 52.1 per cent. of pure mercury, or 56.3 per cent. of the oxide. It is but little soluble in water. The author used it first in an experimental way for four years, and then during the next eight years more or less extensively. It is mostly employed by him hypodermatically as per following formula:

℞ Hydrargyri anilinici 4.0
Oleo vasel. pur. steril..... 30.0
Cocaini nitrici 0.25

M. f. l. a. suspensio. Da invitri albo cum epistomio vitreo et cum collo lato. Formulam signe in eticeto.

Even when injected often and in large quantities there were observed no deleterious effects, such as abscesses or any other inflammatory condition; whatever little swelling did accompany the injection, was not of that hard and painful consistence that is met with in hypodermic injections of insoluble mercurial salts; besides the swelling disappears in a comparatively short time. Gingivitis was observed only in cases where large injections were made at the beginning without first habituating the patient's system to the drug. As regards the results of treatment, the author states that under it he caused the disappearance of syphilitic roseola during the first week of the injections, papules disappeared generally in two weeks, while the more obstinate lichen syphil. and psoriasis palm. as well as the ulcerative forms tended to yield after the fourth or fifth séance. The author advises that in cases where the patient can be placed under the full control of the physician the aniline salt of mercury is much more preferable to other salts in the treatment of syphilis. Not only is it rapidly absorbed, but it is just as rapidly excreted; thus the urine showed a mercury reaction after the second or third injection. The dose of the drug is for an average man one-fifth grain per day, beginning with one-seventh. The author also recommends the drug in a salve as well as internally in pills, and gr. ¼ in a pill; 4 to 8 or 10 to be taken every day. Patients bear the interval administration well and without any gastric disturbance. In general the drug should be employed more extensively, so that its effects might be established beyond any supposition or doubt.

Action of Alkalies on Gout.—The highly interesting article of F. BAHRMANN (*Arch. internat. de Pharmacodyn.*, Vol. 12, fasc. 5 and 6) deals with experimental gout, such as can be readily produced in chickens by feeding them exclusively on meat. The animals remain alive and sometimes even increase in weight, and after several months, characteristic deposits of urates will be found in the joints, pleura, etc. To test the action of various salts, lithium carbonate, soda, common salt and magnesium carbonates, respectively, were mixed with the food, since lithium is used freely in gout and its efficacy is contested by many. It is unfortunate that the animal invariably died shortly after this salt was given, since it apparently has toxic properties for birds. In the animal treated with soda, a deposit of urates did not occur; the action of magnesium was less marked while sodium chloride seemed to have no effect. Quantitative analysis of the feces proved that the excretion of urates is diminished. Not because they are retained in the system, but because they are manufactured to a less degree by the body.

Action of Alkaloids of Ipecac.—P. ZEPF (*Arch. internat. de Pharmacodyn.*, Vol. 12, fasc. 5 and 6) has proven experimentally that cephaeline and emetine have the same action upon man, but the emetic action of the former is considerably stronger. Locally applied to the upper or lower portion of the alimentary tract, both alkaloids are very irritating. An improvement in appetites was never seen; on the other hand, anorexia, aggravation of already existing stomach troubles and headache were quite frequent. Nausea regularly precedes emesis and there are no advantages over the powdered root. An action upon the upper respiratory tract is undoubted and is similar to that of quillaya or senega, but the effect is so slight after oral administration that there is hardly any sense in giving ipecac in tuberculosis. Much more can be expected from gargling or inhalation. A depression of the central nervous system by both alkaloids also took place, while the action upon the heart was not studied.

A New Curative Serum for Dysentery.—Since the discovery of the specific cause of epidemic dysentery by Shiga, various attempts have been made to secure artificial immunity against this disease. L. ROSENTHAL (*Deutsche med. Woch.*, May 5, 1904) after successful experiments in immunizing rabbits and guinea-pigs, used the serum on human subjects. The serum was obtained from horses and it was found that if 0.5 c.cm. were injected into a guinea-pig the day after the infection the animal would be saved, whereas the control animal died within twenty-four hours. The serum is also antitoxic. From 20 to 40 c.cm. were administered in each case and the only after-effects noted were a slight pain at the site of injection, erythema or urticaria. Altogether 157 patients were treated, among whom there occurred eight deaths, about 4½ per cent. The usual mortality rate in the hospitals at Moscow varied from 12 to 17 per cent. In conclusion, the author claims that the serum has a favorable effect on all the subjective and objective symptoms. The pain and tenesmus becomes less at the end of twenty-four hours, blood disappears from the stools, the duration of the disease is lessened, and the chronic form seldom supervenes, and the death rate is reduced by over one-half. If the serum is administered within the first three days after the disease has begun, convalescence is rapidly established within one or two days.

Phototherapy with Fluorescent Solutions.—Very excellent results have been seen by D. JESIONEK (*Münch. med Woch.*, May 10, 1904) from the application of fluorescent substances, such as eosin, to various skin diseases. The parts are repeatedly brushed with a 0.01 to 5 per cent. solution and then exposed to sunlight, or on cloudy days to the action of an electric arc light. The best results are obtained if the light is focused, by means of lenses, directly upon the diseased area, but to avoid excessive heat, a heat-filter containing copper sulphate and picric acid must be interposed. Artificial light is much inferior to sunlight and several cloudy days always prolong the cure. Dilute solutions are generally preferable, since stronger ones will lead to excessive crusting, especially in cancerous ulcers, which no longer permit the rays of light to penetrate. The solution may also be injected directly into the diseased tissue. At night the parts are covered with a moist dressing.

Pharmacology of Sulphur.—When sulphur is brought into intimate contact with fresh intestinal mucous membrane, sulphureted hydrogen will be formed in a short time. Boiling does not destroy this action, which is entirely independent of bacterial life. The stomach does not possess this property even when washed free of acid. A. HEFFTER (*Arch. f. exp. Path. u. Pharmak.*, Vol. 51, Nos. 2 and 3) also found sulphureted hydrogen in the expired air when he injected sulphur into the circulation of animals. This is caused by easily oxidizable albumins in the blood-cells and the organs. It is thus easily to understand why sulphur taken by way of the stomach will increase the amount of sulphuric acid in the urine.

Alkaloids of Corydalis.—Of the eight alkaloids isolated from corydalis cava, formerly much prized in medicine, corytuberin differs pharmacologically from the rest, in that it does not cause a morphium-like narcosis and cardiac depression in frogs. The remainder, F. PETERS (*Arch. f. exp. Path. u. Pharmak.*, Vol. 51, Nos. 2 and 3) divides into three groups, viz., the corydalin group with paralysis of the cord, the corycavamin group with irritation of the motor centers, the bulbocapnin group with increased reflex irritability. The first group may be allied to the morphine group, the third to the codeine group of poppy alkaloids. Therapeutically, only the bulbocapnin comes into consideration, since it may be indicated in motor irritation.

Treatment of Psoriasis.—An ointment, said to be far superior to other applications in psoriasis, is recommended by D. DREUW (*Münch, med. Woch.*, May 17, 1903). It consists of salicylic acid, ten grams, chrysarobin and olenin rusci each twenty grams, green soap and vaseline each twenty-five grams. The alkalinity of the green soap neutralizes the irritating properties of the salicylic acid and chrysarobin, so that inflammation of the skin does not occur.

A New Hemostatic Obtained from the Spleen.—Stagnin is the name of a preparation recently introduced, which does not depend on its mode of action on the contractile power exerted on the blood vessels, as with the suprarenal extracts, but probably has the ability to influence the coagulation of the blood. The action is entirely a chemical one and local application is ineffective. It is particularly applicable to capillary hemorrhages and the author has used it successfully in a number of cases of metrorrhagia and menorrhagia. He thinks, however, that it would also be of service in other diseases accompanied by capillary hemorrhages, in the stomach, intestines or lungs. It is not recommended to supercede surgical treatment, but may be used in those cases where radical measures are not immediately indicated. The drug is an extract from the spleen of horses, obtained by antiseptic autolysis. In animal experiments there was found a reduction in blood pressure and an increase tendency of the blood to coagulate. The best way to give the remedy is by intra-muscular injections in the gluteal region. No unfavorable after-effects were reported in 59 cases of uterine hemorrhage treated with this drug. This communication was made by T. LANDAU and HIRSCH (*Berl. klin. Woch.*, May 30, 1904.

The Excretion of Strontium.—An experimental study of the paths of excretion of strontium has been made by L. B. MENDEL and H. C. THACHER (*Am. Jour. Physiol.*, April 1, 1904) with the following results: Strontium salts are eliminated to a relatively small extent only by the kidneys even after direct introduction into the circulation. The excretion in the urine begins soon, and ceases usually within twenty-four hours. The larger portion eliminated is found in the feces, whether the introduction be per os, subcutaneously, intravenously or intraperitoneally. The place of excretion is apparently restricted to the region of the alimentary tract beyond the stomach. A functional relation to certain phenomena of intestinal peristalsis is suggested. The rate of elimination is slow, and is apparently influenced by the calcium content of the food. Strontium is found deposited in the body chiefly in the bones; traces may be met with in the liver and muscles.

The Action of Various Poisons upon the Pulmonary Circulation.—The greater and the lesser circulations possess a different degre of susceptibility to the action of various drugs, as shown by the experiments of G. MELLIN (*Skand. Archiv. f. Physiol.*, Jan. 20, 1904). Thus, ergot acts upon the pulmonary much more powerfully in raising blood-pressure than upon the systemic circulation. The author questions the desirability of administering ergot in pulmonary hemorrhages, on account of this greater effect in raising the blood-pressure. The tincture and the infusion of digitalis and frequently digitalin, as well as the tincture of strophanthus and strophantin, which, as is well known, act powerfully on the greater circulation, produce little or no effect in the lesser circulation. Occasionally digitalin increases markedly the pressure in the lesser circulation. Amyl nitrite and nitroglycerin have no effect upon the latter. Even in minute doses adrenalin produces a powerful effect upon the systemic circulation, but produces a hardly perceptible variation in the pressure of blood in the pulmonary vessels.

Sodium Sulphite a Dangerous Food Preservative.—A series of experiments to determine the effects of the habitual use of sodium sulphite in the food, were performed in cats by C. HARRINGTON (*Jour. of Infect. Diseases*, March 19, 1904) with results which are valuable from the standpoint of public hygiene, considering the large amount of this substance used as a food preservative. Six cats were under observation, one being a contral and receiving the same weight of untreated meat. They were fed upon freshly-hashed beef, to which was added 20 per cent. of pure crystallized sodium sulphite. From the start, all six of the animals gained in weight, but about the ninth week, all except the control began to lose. At no time did any of the animals show any outward evidence of poisoning up to five months, when all were killed. On section the macroscopic appearances were negative in all respects, but microscopic examination showed a parenchymatous degeneration of the kidneys. Each showed marked fatty degeneration of the renal epithelium; and in one case there was an acute interstitial nephritis in addition to and probably dependent upon parenchymatous changes. The control cat showed no pathological changes whatever. The conclusion is drawn that at least for animals, and probably for the human subject, sodium sulphite is a dangerous admixture to food.

Radiographic Appearances in Pleurisy.—Dry pleurisy, it is easy to understand, must continue to depend for its recognition upon other than radioscopic evidence. J. F. HALLSDALLY (*Lancet*, Feb. 27, 1904) states that in pleurisy with effusion appearances vary according to the amount of fluid contained in the pleural cavity, and naturally upon the position of the patient. The greatest difficulty in the discrimination of fluid in the chest is met with in children. Here, therefore, radioscopy is of the very greatest service in giving aid to clinical signs. The chief points to note in conducting such an examination are: (1) The height of the fluid on the affected side; (2) the contour of the upper margin of

the fluid; (3) whether or not the outlines of the ribs can be distinguished; (4) the position of the heart, and (5) the movement of the diaphragm if this be visible. The conclusions that the author has reached by means of radioscopy are as follows: (*a*) The level of the fluid changes with the position of the patient unless the quantity of the fluid be great or it be encysted by adhesions; (*b*) that a purulent effusion yields the shadow of greater density than a serofibrinous effusion; (*c*) that the shadow is homogeneous, and in the case of serous effusion gradually increases in density from above downward; (*d*) that, however far the heart be displaced to the right, in most cases little alteration takes place in the position of the apex relatively to the base; (*e*) that other conditions being equal, the heart is displaced more when the effusion is left sided, and (*f*) that a somewhat triangular shadow, not normally visible, above and continuous with the shadow of the heart and pericardium is cast by the mediastinum which is displaced by the lateral pressure toward the healthy side of the thorax.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

The Glycogen Reaction in Blood.—The diagnostic import of this sign cannot be understood until the nature of the reaction itself is known. G. LOVELL GULLAND (*Brit. Med. Jour.*, April 16, 1904) states that Ehrlich described it in pus in 1883. Owing to the prominence of other blood reactions, however, it was for the moment lost sight of. But owing in part to the activities of Dunham, Locke and Cabot in America, interest in it has been revived. The method is simple. The solution which serves for fixing, staining and mounting is composed of iodine, one gram; iodine of potash, three grams; water, 100 c.c., with gum enough to make a syrup. With an oil immersion lens a film of normal blood treated with this solution gives red corpuscles stained yellow on a white or faintly yellow background. The white corpuscles are a faint lemon tint. Lymphocytes can hardly be distinguished. Eosinophiles are easily recognizable by their highly refractive granules and the polymorponuclear neutrophiles are distinguished by the darkness of their closely set granules. Masses of blood plates are often seen scattered about the films. These are the only elements in which there is normally the slightest trace of red or brown. This is typical "negative" reaction. In a "positive" reaction, the change occurs in the polymorphonuclears alone. The cells affected may give the brown color of glycogen in three ways: (1) As a diffuse coloration; (2) as fine granules scattered through the whole or part of the cell body; (3) as coarser granules or masses which are usually found at or near the periphery projecting beyond, as pseudopodia. The nature of the material so stained has been freely discussed, but there seems to be no doubt that it is not pure glycogen, but probably a combination of this with some other substance, possibly of a proteid character. From a clinical standpoint it is of great interest to recognize the condition under which this reaction may be expected. These are usually: (1) Severe disturbances of respiration; (2) anemia; (3) toxemias of metabolic origin; (4) suppuration and bacterial infection. The first three are chiefly of pathological and academic interest. Clinically the following are the chief conditions in which a "positive" reaction is constant. (*a*) Croupous pneumonia. Here the reaction is usually positive and intense. It often develops within ten hours of the initiative rigor. In the early hours of a central pneumonia it is of great diagnostic value. It persists until the crisis. If it does not disappear shortly after that event, the possibility of empyema is awakened. (*b*) In bronchopneumonia the reaction has been found, but is rarely so well marked. (*c*) In empyema the reaction is always positive. (*d*) In abscess and gangrene of the lung; (*e*) in septicemia and pyemias of all kinds; (*f*) in all advancing suppurative processes; (*g*) in appendicitis and peritonitis. In 21 cases of general peritonitis from various causes reaction is always present. In abdominal cases in particular, it seems to the author to be a much more trustworthy guide than leucocytosis, for while a high leucocyte count always indicates operation, many cases of appendicitis, as is well known, either have no leucocyte increase owing to the overwhelming of the organism by the virulence of the toxemia, or else show an increase of only two or three thousand above the normal. A most important point is the period after the onset of the symptoms at which the reaction appears. Locke found it faint three hours after the perforation of a typhoid ulcer. But it was well marked in the same case six hours later. The author has found it very intense twelve hours after perforation of a gastric ulcer, and fifteen hours after the onset of symptoms in a gangrenous appendix case; also well marked an hour and a half after the onset in an inflamed appendix and peritoneum. The relation of the reaction to leucocytosis may be briefly stated thus: While many of the causes which produce the reaction also cause leucocytosis, there is no necessary connection between the two. It is well seen in the case of rhumatic fever in which leucocytosis is the rule, the glycogen reaction, however, being absent. The glycogen reaction is more valuable as a diagnostic sign because it is not, as is the leucocyte count influenced by the extremes of the conditions which produce it. It is well known that there may be no leucocyte count in an infection of low grade or one of ultra virulence. It is probably the most delicate test yet found for indicating the presence of certain pathological phenomena.

Movements of Lymphocytes.—A characteristic property of leucocytes, as distinguished from lymphocytes, is their mobility and power to emigrate. If, however, subjected to abnormal conditions, lymphocytes will also give evidence of ameboid motion. When K. WLASSON and E. SEPP (*Virchow's Archiv*, Vol. 176, No. 2) heated blood to 42 to 48° C., the motions of the leucocytes became incoördinate and more than one pseudopodium was extended at the same time so that the cells often appeared very much elongated. Some of the cells became swollen and lost their vitality. The lymphocytes on the other hand were more active and at 440 they began to creep. If the temperature was reduced, the motion continued even down to 36°. If placental tissue, peptone or farina be added to blood the same changes are noticed at a lower temperature.

A New Alkaloid of Putrefaction.—By means of a complicated process, E. S. FAUST (*Arch. f. exp. Path. u. Pharmak.*, Vol. 51, Nos. 2 and 3) succeeded in isolating minimal quantities of a crystalline alkaloid, allied to cadaverine, from putrefying yeast. Injected into animals, it possesses the same action as yeast itself, hence is probably the cause of its intense toxic properties. The respiration of dogs will first be increased and deepened, repeated vomiting soon sets in and intestinal peristalsis is much stimulated. The animals seem to suffer from very severe tenesmus and soon pass pure blood. The respiration then becomes less frequent and the animals finally die in coma. At autopsy, an intense capillary hyperemia with ecchymoses, is the most prominent

feature. Emboli, however, do not occur. The action closely resembles that of arsenic.

Blood in Bilharzia Disease.—Being stationed in Egypt, A. Kautsky-Bey (*Zeitsch f. klin. Med.*, Vol. 52, Nos. 3 and 4) has ample opportunity to examine the effects of bilharzia infection upon the blood. It seems that the majority of patients, even of the better classes, are affected with this disease, the most prominent symptom of which is hematuria. As a rule the anemia is not excessive and is chlorotic in type since the number of red cells is relatively high. The eosinophiles are considerably increased. In many cases anchylostomum was also found in the feces, but these cases did not seem more anemic than the uncomplicated ones. Anchylostomum infection thus plays a very subordinate rôle in the etiology of Egyptian anemia as compared with bilharzia.

Granules of Leucocytes.—It is generally stated that the neutrophile and eosinophile leucocyte of the blood, together with the mast-cells, are the only normal granulated cells. A. Wolff (*Zeitsch. f. klin. Med.*, Vol. 52, Nos. 3 and 4) believes, however, that the lymphocytes and large mononuclear leucocytes possess distinct basophile granules which are, however, so easily dissolved out that often their vacuoles only are seen within the protoplasm. The ordinary neutrophile granules of the same person may take on different hues from blue to reddish-violet, but this is not sufficient reason to subdivide them, since, besides showing an affinity for the neutral dye, they also absorb varying amounts of the dissociated stains.

Anticrotalus Venin.—The investigation of the nature of the poison of snakes has always possessed a peculiar interest, due, in part, to the mysterious effect of an animal secretion upon other animals. This interest, which appeared to have culminated in the researches of Weir Mitchell and his followers and in the production of an antivenin by Calmette of Lyons, has been revivified by the impetus of the Ehrlich theory of immunization. It is upon this latter standpoint that the reinvestigation of crotalus venom was undertaken by Flexner and Noguchi (*Jour. Med. Research.*, May, 1904), with remarkably interesting results. Their problem was to produce an anticrotalus venom. Analysis showed them that rattlesnake venom owes its toxicity chiefly to a principle which they call hemorrhagin, which acts as a specific poison, a cytolysin on the endothelial cells of the blood-vessels. Hence, its local effect is primarily to produce profuse hemorrhage. This primary effect, coupled with other factors, such as bacterial invasion, rapidly leads to necrosis and putrefaction. In addition, however, the venom paralyzes the self-protective mechanism of the human organism—in terms of the Ehrlich conception, the venom amboceptor unite with and neutralize the human bactericidal complements. In order to produce an antivenom, two lines of procedure were tried. The attempt was made to attenuate the hemorrhagin by heat, but it was found that this modification destroys the active principle so that no antibody can be formed. The authors then determined to produce a toxoid, in other words, a molecule in which the toxicity is destroyed, while the power to set up antivenin formation in the rabbit and dog is retained. This they accomplish by subjecting the venom either to hydrochloric acid, or to the acid with pepsin, or to iodine trichloride. Thus the Ehrlich theory of toxins and toxoids proved of great practical value in obtaining a specific antivenin for the rattlesnake poison.

Complications and Degenerations of Uterine Fibromyomata.—The renewed interest which this subject has lately received, as applied to the question of treatment, renders of value a study of 280 cases of uterine fibromata made by E. McDonald (*Jour. Am. Med. Ass'n*, May 21, 1904) occurring during the last seven years at the Albany Hospital. An attempt has been made in this investigation to determine the frequency of the various degenerations and complications and to base on this certain conclusions concerning treatment. It appears from the study of these statistics that all fibroids which are producing symptoms, and all those designated as small (especially when subserous or intramural), should be removed, because the risk to the patient from operation is far less than that from the tumors themselves. In view of the sarcomatous changes, carcinomatous associations and complications, early removal is indicated when they are of sufficient size to produce symptoms. Small, uncomplicated tumors not producing symptoms do not require early treatment. Thorough pathological examination should be made of all fibroids for evidences of malignancy. Particular study should be devoted to those tumors which are necrotic, cystic or both, as among these are found the largest proportion of malignant changes.

Bile Capillaries of the Liver.—Under normal conditions the bile capillaries which run in the axis of a liver lobule unite to form an anastomosis of wide meshes and exhibit ampullæ where they meet. The intercellular branches generally end blindly but never reach the blood vessels; the branches that enter the cells themselves also enter blindly at some distance from the nucleus without giving off branches. In simple mechanical icterus, S. Abramow and A. Samoilowicz (*Virchow's Archiv.*, Vol. 176, No. 2) found dilatation of the entire system up to the finest branches, which elongate and often rupture so that the bile reaches the perivascular space. This is followed by necrosis of circumscribed portions of the parenchyma. Jaundice secondary to carcinoma and atrophic cirrhosis is only a variety of mechanical jaundice. In suppurative cholangitis the walls of the bile-capillaries are destroyed, which facilitates the discharge of bile into the perivascular spaces. In chronic congestion, solid matter is precipitated in the capillaries. The bile here reaches the lymphatic system owing to the obstruction caused by these thrombi and by the periportal connective tissue; besides this a destruction of cells goes on in the center of the acini owing to pressure of the dilated blood-capillaries; this will also destroy the contained bile-capillaries so that the bile can reach the lymphatics freely from the open ends.

Technic of Widal Reaction.—The various methods of performing the Widal test has been subjected to a comparative test by A. Lion (*Münch. med. Woch.*, May 24, 1904). He found the macroscopic test with living birth cultures rather uncertain, since it is difficult to obtain the proper turbidity of the fluid even if used after fourteen to twenty-four hours. Negative results were common where other methods were positive. The same observation was made when a loopful of an agar culture was rubbed up with saline solution, sometimes the agglutination was very imperfect though the case was an undoubted typhoid. Very good results were obtained with formalinized cultures; they keep for a long time and enable the busy practitioner who has neither time nor facilities to reinoculate daily, to use the test. A formalinized culture of typhoid plus paratyphoid has certain advantages, as it will react to either infection, though not completely so unless the serum has high agglutinating powers. Thus, in either typhoid or paratyphoid, the fluid will clear partly and on microscopical examination clumps and motile bacilli can be seen with this mixture, paratyphoid cases will no longer be over-

looked and a separate agglutination with each bacillus will decide which of the two is the cause of the clumping. The reaction with dead cultures is in every way as distinct as with live cultures, but is somewhat slower, so that the time limit must be extended beyond half an hour.

Relation of Some Other Bacteria to Typhoid.—An interesting and unique observation on the properties of some intestinal bacteria is put on record by E. Altschüler (*Münch. med. Woch.*, May 17, 1904). The Widal reaction in a case clinically presenting all the symptoms of typhoid was negative, but the paratyphoid bacillus type *A* was agglutinated in sufficiently high dilution. Blood obtained by venesection and grown on broth gave typical typhoid germs in pure culture and finally at autopsy the *Bacillus fæcalis alkaligenes* alone was found in the spleen. The only way the author could explain this case was by assuming that one germ only was present but that under different conditions it acquired different properties. To prove this, typhoid germs were grown on human placenta; after several months they grew on potato and litmus whey just like the *Bacillus fæcalis* and also lost their specific agglutination. A typical culture of *Bacillus fæcalis* was then allowed to stand for three months, and then transplanted and tested once a week. It gradually lost its typical character, and resembled more and more the typhoid germ; finally, after having been passed through a rabbit, very high agglutination toward a control typhoid culture was obtained. The altered typhoid germ again lost its newly acquired properties after three to four weeks, but the altered fecalis still resembles the typhoid in every respect after four months. The author found the fecalis most often in the stools of typhoid convalescents, rarely in milk and water and occasionally in normal feces. Its only two characteristic properties are its growth on potato and litmus whey.

Lecithin and Snake Venoms.—It has been proved by P. Keyes (*Hoppe-Seyler's Zeitsch.*, April 9, 1904) that lecithin is the chief activator for the amboceptors of cobra poison, since the latter alone is incapable of destroying red blood cells, but in the presence of minimal amounts of lecithin is capable of doing this. The author and H. Sachs also showed that these forms of blood that were laked by apparently cobra venom alone were really acted upon by a combination of venom and lecithin, since the latter is a constituent of the red blood cells and of the plasma. Now, although all kinds of blood contain lecithin, yet only certain forms are laked by cobra poison. This apparent contradiction is explained by the fact that lecithin is not bound up to an equal degree in all forms of blood. The method by means of which one may determine the strength with which lecithin is bound up with the rest of the cell, and which will enable one to peer into the recesses of lecithin metabolism, which method is afforded by cobra venom, is indeed a novel and promising one. Thus H. Sachs has shown that while cobra venom takes the blood of fetal cows, it has no effect upon that of the adult animal. He concluded that in the former the lecithin is held in loose union and is therefore capable of eliciting the toxic properties of cobra venom. This looser union of lecithin denotes a different degree of lecithin metabolism in the fetus, fortifying the generally accepted hypothesis that lecithin takes an important part in the development and growth of the organism. The author worked with a series of different snake venoms and studied their effect upon the blood of camels, oxen, rabbits, men, and guinea pigs. The blood of the first three was not affected, and of the last two, the blood was laked by different doses of the various poisons. These facts indicate that in different animals lecithin is bound up in varying degrees, and that in any one animal where blood is susceptible to the toxic influence of snake poison, the venoms of the different snakes have a varying avidity for the lecithin. In studying the effect of Calmette's antivenin, the author found that the protective influence of this serum varies in the same way with the different poisons and in the same order as these are capable of laking the red blood cells. These researches are valuable, apart from their own interest, for the light which they throw upon certain obscure problems in physiological chemistry, particularly upon the question of lecithin metabolism. These researches show at least that the lipoids are found in the organism, not free, but stored up in some chemical union.

The Toxic Characters of the Urine in Fatigue.—By injecting the urine of fatigued individuals into rabbits, G. Astolfoni and F. Soprana (*Arch. Ital. de Biologie*, March 24, 1904), were able to determine the variations in the toxic power of the urine under conditions of fatigue. They found that this toxicity is quite marked, and that a large part of the poisonous product elaborated in the organism during fatigue are rapidly eliminated by means of the urine, but that a small portion remains for some time in the organism. The latter fact is indicated by a miosis, which, although slight, persists for a long time, even after the other toxic properties of the urine have disappeared. These latter are seen in the marked tendency to produce convulsions, in an anti-diuresis, and in cases of prolonged fatigue, in direct fatal effects.

Histological Changes Produced by Adrenalin Chloride.—The increasing importance of adrenalin in hemorrhagic conditions and in cases of diminished blood pressure imparts a peculiar interest to the researches of W. B. Drummond (*Jour. of Physiol.*, May 3, 1904). The microscopical changes produced by this drug are to be attributed to its action upon the blood-pressure and to its toxic effects. The evidence of its action upon the vascular system is a congestion of the viscera and occasionally hemorrhages and serious effusions. The congestions due to the action of adrenalin upon the blood-vessels arise from an increase in pressure in the large arteries whose arterioles do not contract, or from a rise of pressure in the large veins, which increases the pressure in the central lobules of the liver and in the convoluted tube region of the kidney. The changes in the lung may be an edema or a congestion with or without hemorrhages into the air-vesicles. If the animal lives long enough the congestion is followed by inflammation due to effused blood or microorganisms. The author believes that the inflammation is also the result of a toxic action, as evidenced by early appearance of this phenomenon and the absence of microorganisms. He also agrees with Brodie, that adrenalin acts upon the peripheral blood-vessels through the vasomotor nerves. The experiments of Brodie and the author strongly contraindicate the use of this drug for hemoptysis. The toxic influence of adrenalin is manifested in the glandular organs, principally the liver and kidney, on which it acts as a protoplasmic poison. In the kidneys the brunt of this action falls upon the cells of the convoluted tubules, and in the liver upon the cells of the central zone. The changes in the liver are of marked interest in connection with the associated fall of urea nitrogen described by Patton.

Portal of Entry of Tuberculosis.—The old theory of infection by way of the respiratory tract is no

longer tenable, according to H. VOLLAND (*Münch. med. Woch.*, May 17, 1904). The real cause of tuberculous infection is scrofulosis which is common during the second year of life, since children then learn to walk and come into intimate contact with the dirt of floors and streets. Abrasions and eruptions about the nose and mouth, the epithelial desquamation incident to teething, all form ready portals of entry. Scrofulosis is thus due to dirt, and if tubercle bacilli are also rubbed in, consumption results. Prophylaxis should thus not be directed against adults, who are, as a rule, already infected, but against children before they learn to walk. It is very doubtful if a patient, who has passed through a tuberculous infection during childhood, will possess a protective degree of immunity during later life.

Intermittent Claudication.—The typical symptoms of intermittent claudication are given by W. ERB (*Münch. med. Woch.*, May 24, 1904) as follows: Paresthesiæ and pains in the feet on walking, tension, pain and stiffness in the calves or higher up, a cold sensation, anemia or cyanosis, sometimes heat and redness of the feet, difficulty on walking so that frequent rest must be taken. The most important objective sign is absence or smallness of the pulse in several or all of the arteries of the foot, with sclerotic changes in the vessels. In atypical cases there may only be weakness without the characteristic intermissions, but the objective symptom is always present unless there is an anomalous condition of the vessels, so that the blood-supply is normally insufficient. The disease is more frequent on the left than the right side, but usually bilateral. General arteriosclerosis is common, but the heart is usually found normal. There are cases where all the typical signs are present without lesion, since due to an angiospastic condition; conversely, all four pulses may be absent without symptoms. The majority of patients are males beyond forty years, of the better classes. The etiology is that of arteriosclerosis in general, but rather often a distinct history of excessive smoking can be obtained. The treatment calls for proper diet, iodides, heart tonics, the application of warmth and galvanic foot-baths.

New Method of Testing the Heart.—In a lengthy communication recently presented to the Verein für Innere Medizin, in Berlin, M. KATZENSTEIN (*Deutsche med. Woch.*, June 2, 1904) proposes a new method for determining the functionating power of the heart, which is particularly of service when that organ is about to be subjected to the strain of a surgical operation. His procedure is based on observations made on animals that ligature of the larger arteries results in an increased cardiac activity, which is characterized by higher blood pressure, without any change in the pulse rate. This condition does not disappear until the collateral circulation is fully established, and as the resistance becomes lessened after several weeks, there is a return to normal conditions. As applied in practice, the patient is placed in a reclining position, and when thoroughly quiet, the pulse rate and blood pressure are determined. Compression of both iliac or femoral arteries is then secured and kept up for two to five minutes, and then the changes noted in blood pressure and pulse rate. In a normally acting heart, the pressure causes a rise in the column of mercury of the instrument, of from 5 to 15 mm., while the pulse rate remains the same or is slightly diminished. In case of a hypertrophied heart, a rise of from 15 to 40 mm. is noted, and the pulse remains the same or is increased. A slight insufficiency is accompanied by a pressure of 0, and a pulse rate unchanged or increased. A marked insufficiency causes a minus pressure and an increase in the pulse rate. The method has the advantage of being simple and easily applied, and excitement being the only factor which might influence the result. This must be carefully guarded against.

Thoughts Suggested by Health Department Statistics.—Although statistics are seldom accurate, yet they furnish material for valuable deductions and serve to show the trend of various diseases. G. L. PEABODY (*Med. Rec.*, June 4, 1904) points out that since 1894 there has been a constant increase in the death rate, for typhoid fever, it having risen during that time from 4.37 to 11.26 per 10,000 inhabitants. One possible cause which he suspects is the fact of the deprivation of the excellent storage system for the drinking water which has been believed to be an important factor in purifying the water. It is now known that owing to the immense consumption of water, the water comes almost directly from the water-shed, and as it is impossible to absolutely protect that immense tract from pollution one must necessarily incur certain risks. The number of deaths from malaria—90—he believes to be impossible. No doubt, the majority of these were typhoid fever. A very satisfactory showing was made in smallpox, for only five deaths occurred. In commenting upon this disease he suggests that many unnecessary hardships to private families could be avoided if the rule of removal to quarantine stations could be more leniently enforced. If vaccination protects and thorough isolation could be carried out there ought not to be any more danger from the spread of this disease than from many others.

Demineralization and Tuberculosis.—A number of French authors have stated that hypo-acidity and a redúction in the inorganic constituants of the body, decreased the resisting powers of the organism against the invasion of tuberculosis and afforded a more favorable condition for the extension of the disease. F. STEINITZ and R. WEIGERT (*Deutsche med. Woch.*, June 2, 1904) have made a series of investigations in order to substantiate this claim, if possible. They made a chemical analysis of the entire body of an infant which had died from general tuberculosis and compared the results with those already known in healthy normal infants, or in those which died as the result of other diseases. It was found that the total amount of ash obtained from the tuberculous child about equaled that from the four months' infant which had died from ordinary gastro-enteritis, and therefore no marked demineralization appeared to have occurred. Lime, phosphorus, and magnesia were found to be lessened in amount, but this the authors attribute to the presence of a rachitis which was present in the tuberculous infant, but from which the other child was free. Potassium salts were unchanged and the sodium and chlorine elements were diminished. These findings apparently show that demineralization does not occur in tuberculosis.

Gastric Hemorrhage Due to Aneurism.—A fatal case of this unusual condition is reported by H. HIERSCHFELD (*Berl. klin. Woch.*, May 30, 1904) as having occurred in a young man of twenty-eight years, who was also a hemophiliac. During the course of seventeen years he had been subjected to hemorrhages from the stomach 13 times, and to the last of these he succumbed. At the autopsy the source

of the hemorrhage was seen to be a small miliary aneurism situated in the mucous membrane of the stomach, and this was surrounded by a number of varices, none of which had, however, ruptured. Evidences of an alcoholic gastritis were present, but the author thinks that the fatal bleeding would have been avoided if the man had not been a hemophiliac. The latter condition also prevented surgical interference, which would otherwise have been appropriate. The diagnosis of such cases would be difficult, but aneurism might be considered whenever repeated gastric hemorrhages are present without any pain. A purpose in reporting this case was to restrict the number of so-called parenchymatous hemorrhages from the stomach, which term has been employed to cover a number of obscure conditions.

PHYSIOLOGY.

Action of the Spinal Centers Upon the Tone of the Respiratory Muscles.—Because they are brought continually into action, the respiratory muscles possess a tone which is much more marked than that of the rest of the muscular system, according to A. Mosse (*Arch. Ital.. de Biologie,* March 24, 1904). The phrenic nerves exercise a tonic action upon the diaphragm. Asphyxia stimulates the nerve-cells in the spinal cord that govern the tone of the muscles concerned in breathing. These cells have an excitability of their own which is distinct from that of the other cells which innervate the muscles. When, by means of chloral, excitability is diminished and asphyxia is preduced, there occurs during the pause, when the violent respirations have passed, an increase in tone of the muscles of breathing, which is followed by the final respirations. The movements which are produced during the period of augmented tone, demonstrate that the tone of the muscles is quite a different thing from the ordinary contractions, since the two functions behave differently under the same conditions. When the animal is deprived of oxygen, the tonic respiratory centers in the spinal cord cease to act a short time after the cardiac inhibitory centers have begun to be excited. When the spinal cord has been paralyzed by cocaine, locally applied, and is beginning to recover, the first phenomenon to appear is the tone of the respiratory muscles, which shows that the functions of the spinal cord recover in the inverse order to their abolition. Moreover, the respiratory tone is not a constant one, but is subject to variations, resulting from changes in the excitability of the spinal cells. The tonic cells presiding over the thoracic muscles and diaphragm are independent among themselves and have distinct locations.

Changes in the Blood at High Altitudes.—An increase in the number of red blood cells (hyperglobulia) has been observed as the result of residence at high altitudes C. Foa (*Arch. Ital. de Biologie,* March 24, 1904), finds that this condition does not occur at the height of 1,200 meters, but that at 1,800 meters there is not only a rapid increase in the red blood cells within a few days, but also an increase in hemoglobin. At 3,000 meters the hyperglobulia begins eight to nine hours after arrival or even sooner. It varies in degree with different individuals. Hemoglobin increases *pari passu* with the red blood cells. The hyperglobulia is merely peripheral, being absent in the blood of the larger arterial trunks. In experiments performed upon rabbits and guinea-pigs the author noticed that six hours after arrival at the altitude of 3,000 meters and from one to six days of residence at 4,560 meters, the bone marrow does not show, either by its color or by its microscopical appearance, any increased hematopoxesis. The latter, however, occurs from eight to twelve days after arrival at the higher altitude. In individuals, on the tenth day of residence at high altitude, there is a slight increase in red cells and hemoglobin even in the large arterial trunks, which is the result of increased production of erythrocites in the red bone marrow. Thirty-six hours after a return to the sea-level, the peripheral hyperglobulia has disappeared. The climatological and therapeutic applications of these researches suggest themselves.

The Causes of Peripheral Hyperglobulia at High Altitudes.—In conducting a critical and experimental research into the cause of the increase in the number of red blood cells in the peripheral circulation that ensues upon residence at high altitudes, G. Foà (*Arch. Ital., de Biologie,* March 24, 1904), finds that upon the returning of the blood to its normal condition when the individual returns to the sea-level, there is urobilinurea, which indicates that there is no destruction of red blood cells. Grawitz has sought to explain the increased erythrocytosis upon the basis of a loss of the fluid elements of the blood; but the author finds that the body actually exhales less water in a rarified atmosphere than in a normal one. The author believes that the principal erythrocytosis of high altitudes is to be attributed to a stasis of blood in the dilated superficial vessels, so that the red corpuscles. being the heaviest morphological elements, circulate least rapidly, and loiter in the capillaries.

The Behavior of Carbon Monoxide in the Organism.—The manner in which carbon monoxide is eliminated from the body is, according to P. Giacosa (*Arch. Ital., de Biologie,* Vol. 50, No. 2) not yet perfectly known. It has been found that in an animal which has survived intoxication, however severe, after a variable period of time, the blood does not contain carbon monoxide hemoglobin. This disappearance does not take place if the blood after removal from the body is hermetically sealed, or if it be allowed to remain in the cadaver; the disappearance of this compound is therefore bound up with phenomena connected with life. The author was able to prove that CO hemoglobin decomposes when exposed to the air for a long time. The question arises whether carbon monoxide leaves the blood without suffering any change, or whether it is oxidized into carbon dioxide. Has the living organism the power to oxidize the molecule CO into CO_2. The prevailing opinion has been that the latter is the case. Experiments have been conducted to determine whether the disappearance of CO Hemoglobin from the blood is associated with the appearance of CO in the expired air, and the results of various investigations have been contradictory. On this subject the author performed certain preliminary experiments. He found that the blood obtained from an intoxicated animal, or healthy blood which has been impregnated with CO, and then defibrinated in either case, if kept in test tubes in a water-bath at a temperature of 38° C., gives off CO for several hours, at first with intensity, which diminishes until at the end of fifteen or sixteen hours there is not a trace of CO in the air emanating from the surface of the blood. The author then studied the possible effect of fresh pulmonary tissue upon this liberation of CO. At first this is retarded, but later on there is an increased elimination of CO. Moreover, the blood containing pieces of lung becomes cloudy, and putrefies after a number of hours, while the plain blood does not putrefy. The author now performed an experiment to see if CO_2 may be produced in the blood at the expense of CO. He found

that blood containing carbon monoxide and pieces of lung produced more carbon dioxide that either healthy blood with pieces of lung, or blood with carbon monoxide alone. This result proves that CO is really oxidized into CO_2. The author revealed a further fact, which may possibly be of service in the treatment of cases of carbon monoxide poisoning, namely, oxygen, particularly at an elevated pressure, facilitates the dissociation of and expels from the blood every trace of carbon monoxide.

SURGERY.

Treatment of Fractures.—In order to avoid the difficulties and uncertainties of the bloodless reduction of the fragments in a fracture of the lower end of the humerus, P. Niehans (*Archiv f. klin. Chir.*, Vol. 73, No. 1) proposes the temporary fixation of the fragments with steel nails. He has found the procedure of particular value in children. The operation consists of an exposure of the parts which is secured by reflecting backward, the mass of extensor muscles together with the olecranon process, which has been temporarily resected. The fragments are then brought into apposition and held in place by two steel nails, of a square form and nickelplated. The latter may again be removed in from four to seven days. The fragments will have become sufficiently united to permit fixation of the arm in an ordinary sterile dressing. The osteoplastic ulnar flap heals like any other sutured olecranon fracture. The writer has also treated in a like fashion, fractures of the greater tubercle and the head of the humerus. Six successful cases are reported, and it is suggested that the method might also be applied to condylar fractures in the knee-joint, fractures of the tibia, astragulus, etc.

Appendicitis and Inguinal Hernia.—An interesting study is presented by M. A. Wassiljew (*Archiv f. klin. Chir.*, Vol. 13, No. 1) of 63 cases of appendicitis which have developed in the hernial sac in males. He reports in detail his own case, the others are gathered from the literature. Infancy and old age offer the main predisposition to the condition. This form of appendicitis may assume the acute or the chronic type. The acute form rarely runs such a stormy course as that in the free abdominal cavity, and even where perforation has taken place, it often assumes the subacute form. The diagnosis is almost impossible to make, but the prognosis is more favorable than for the condition in the abdomen. The operative treatment must be directed toward both conditions, but the corrective treatment of the hernia itself depends more or less on attendant circumstances. In 39 cases where resection of the appendix was done, there were only three deaths, while in 18 cases where this was omitted, ten deaths occurred. An endeavor should be made to save the testicle, but in chronic cases with much tumefaction castration must be resorted to.

External Luxation of the Knee.—If one should judge by the number of reported cases, this lesion must be looked upon as an exceedingly rare one. Vautrin (*Rev. de Chir.*, April, 1904), states that in his opinion external luxation is more common than ordinarily supposed. If this be true, the frequent complication of the lesion by tearing of the external popliteal nerve renders the lesion of very considerable surgical importance. The author states clearly that he does not refer to external dislocations of the knee, which must, in the nature of affairs, be produced by profound traumatism. It is the milder forms, the luxations proper, which he discusses. In reading the old observations of Malgaigne, Hamilton and Claudot one reaches exactly the same conclusions, viz., that this form of traumatism is accompanied by an almost infinite variation in the degree of traumatism both to the soft and to the hard parts, that sometimes reduction is remarkably easy, sometimes impossible without an anesthetic; that immobilization after reduction does not justify one in counting upon complete functional success; that, all in all, no conclusions as to the degree of internal injury can be reached with the ease or difficulty by which reduction has been accomplished. It is a mistake to believe that cure lies entirely in the reëstablishment of the ligamentous portions of the joint. The restoration of the crucial ligaments or the attachment of the cartilages does not always depend upon a prolonged immobilization. This serves to add importance to the question whether one should or should not immobilize the parts for a long time. Since so little of the actual conditions prevailing in the joint can be determined from physical examination, obviously no dogmatic conclusions can possibly be reached which will apply to this form of injuries. The luxation of the fibula is one of the most important considerations in determining the treatment, because of the anatomical relation of the external popliteal nerve to the head of this bone. The duration of immobilization varies, of course, with the gravity of the case. If the fibula has remained in place, three weeks will usually accomplish all that may be necessary. But should this immobilization be blindly conducted, the dangers attending it are possible anchylosis and loss of invaluable time, which might have been devoted to the remedy of nerve defects had such been ascertained by open incision and repaired at the time of replacement. The injury to the hard parts is often complicated by repairing of the vascular supply of the joint. Although the destruction of the veins is of serious import, it does not compare in gravity with the rupture of the artery. This, as is well known, results always in a traumatic aneurism which often terminates in gangrene. The injury to the nerves has been but slightly touched upon by surgical authors. Eames has reported a single case which was complicated by complete paralysis of the anterior tibial nerve resulting from an anterior luxation of the knee with fracture of the tibia. The author then cites the history of a case of a young soldier, who in jumping on a tanbark court, twisted his knee, luxating it externally. He was unable to see the patient until twenty-four hours was passed. The fibula was also dislocated. Disability was complete. Pain was marked over the popliteal space, but both the popliteal and the tibial arteries pulsated normally. Under chloroform anesthesia the luxation was reduced without trouble. The injured member was immediately immobilized in complete extension. Very shortly after the replacement, it was noticed that all muscles were paralyzed, which were supplied by the external popliteal nerve. Sensation of the perineal region was also almost nil. It was thought at first that this was due to a simple compression, but after a few days it was found that despite the subsidence of the hematoma, the paralysis remained. Electricity, massage and all forms of treatment were resorted to, but for three months there was no change. Walking became very difficult. The point of the foot was dropped, unusual motions of the body being necessary to raise the member in stepping forward. Operation was advised, but was refused. It is not surprising that the external popliteal nerve should be torn if the external ligaments are ruptured. Indeed, the anatomical arrangements of the parts are such that it seems difficult to believe that any extensive ligamentous tearing may take place without corresponding injury to this nerve. The author therefore advises that in all these cases the nerve should be freely exposed and sutured if necessary.

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SPECIFICITY IN BACTERIOLOGY.

Among the many important contributions of Koch, there are few which have had a more notable influence in the development of bacteriology than his theory of the specificity of micro-organisms. Men have come to regard this theory as almost an axiom of biology, and thus underestimate the tremendous advance which it marked in the progress of medicine. That bacteria are definite species, with definite biological and, under given conditions, definite pathogenic characters, seems to be a fact so self-evident that those who would doubt it carry the burden of disproof.

Not so in the sixties and seventies of the preceding century. At that time the theory of Pettenkofer in Munich was dominant, who held that in the bacterial world there was no fixity of specificity, either from a biological or a pathogenic standpoint. It was then commonly taught that harmless micro-organisms might, by a period of sojourn in a proper environment, become endowed with the virulence of a typhoid or a cholera germ; the fixed quantity in the etiology of disease was the soil, not the germ. All this was changed by Koch, and, with it, the etiology of modern medicine.

Many onslaughts have been made on this theory, and it has weathered them all. Experimental work has revealed the fact that there is hardly a characteristic of the bacteria which cannot, by artificial conditions, be markedly altered; reducing forms may be made non-reducing, sugar-fermenting forms trained not to ferment, and pathogenic traits may be "attenuated" out of existence. And yet these striking metamorphoses have evinced themselves as nothing but masks, as a change of complexion, under which lay concealed the original type in its pristine character.

Nevertheless, it may now truly be said that the fate of the theory has become seriously imperiled. The story is not a very long one. In October, of 1903, a case of a supposedly typhoid infection appeared in the wards of the Naunyn clinic in Strassburg. As is the practice in that clinic, the agglutinating reactions were immediately tested with formalin emulsions of the typhoid, paratyphoid A, and paratyphoid B, stems. It was found that the reaction was marked for the paratyphoid A, and weak for the others. With the view of further investigating this rare disease, paratyphoid blood cultures were taken. To the great surprise of the bacteriologists, not paratyphoid A, but typhoid bacteria were grown from the blood. This, however, was not all. The patient died, and from an abscess of the spleen a pure culture of a third species, *B. fæcalis alkaligenes*, was grown. Here was a problem: Was the case one of a triple mixed infection? Or was it a case of heteromorphism of one and the same organism? The latter hypothesis has been exploited by one of the assistants of the imperial typhoid commission in Strassburg, and with truly remarkable results. He discovered that by growing typhoid bacteria over many months on sterile placenta, he could change its biological characters to such an extent that it became indistinguishable from *B. fæcalis alkaligenes*, while, on the other hand, the latter organism could by other manipulations, the details of which must be sought in the original, be transformed into an apparently genuine typhoid form.

Was there here a true or only an apparent and superficial metamorphosis? There are still other tests, which are commonly believed to be far more crucial and distinctive of a micro-organism than its biological characters, namely its pathogenicity and, in still higher degree, its agglutination reaction. The altered forms, or "sports," should be examined by these criteria. And here is the crowning detail of the entire research—the bacillus of typhoid had lost enormously in its patho-

genicity and in its susceptibility to immune serum, and the fæcalis had gained in a corresponding degree. Apparently the typhoid had become a fæcalis, and vice versa. There is no other way of describing the results.

This is the most striking and clear-cut contribution which has ever been made to the problem, but it does not stand alone. There is a constantly increasing fund of data which goes to show that biological characters, pathogenicity, and agglutinability of any form may be considerably altered by external factors, and that, having been so altered, they may retain their new characteristics as fixed traits apparently over indefinite periods of time. Especially noteworthy are such researches as that of Buxton and Vaughan, which demonstrate a high degree of instability in the agglutinating function, and its permanent reducibility in the typhoid germ. The evident trend of all these currents is towards a reversal, or a modification, of the theory of bacterial specificity as advanced by Koch. To go no further than the typhoid problem, it becomes pertinent to inquire whether every sporadic case of typhoid must necessarily be supposed to have derived the contagium vivum from a previous case. As Altschüler suggests, it is at least imaginable that that ordinarily harmless denizen of the gut, the *B. fæcalis alkaligenes,* may under circumstances of growth, not as yet understood, become pathogenic—become, in fact, a paratyphoid or a typhoid organism. The hypothesis five years ago would have seemed worse than heretical, but seems now almost unavoidable. And if this be admissable, it seems pertinent to inquire into the status of the pseudo-diphtheria bacilli, the pseudo-tubercle forms, and a vast number of other organisms, and their relation to the so-called "true" agents which they simulate. All this is, indeed, very hypothetical, and very unorthodox, but it is at the end of the vista which has been revealed by the researches of the past few years.

A MODERN DIDO.

Psychologists teach us now that crime, like disease, comes in epidemics, and that waves of deviation from the normal standard are apt to sweep communities at stated times and intervals. Some particular form of depravity or mental aberration becomes rampant, and from its frequent occurrence attracts widespread attention, only to subside as some other manifestations of "undivulged crime, unwhipped of justice," takes its place. Thus the public mind, particularly that of the professional reformer, is led to the erroneous conclusion that mankind is degenerating and that there is now little to be saved from what Addison was pleased to term the wreck of matter and the crash of worlds.

The latest illustration of the contagiousness of a bad example may be found in the number of deaths, by suicide, that have been reported in the newspapers from all parts of the country. Now suicide is not a new development and it has existed from time immemorial in all countries and among every condition of men. At least three European monarchs are known to have taken their own lives during the last hundred years, one of whom, the late Sultan of Turkey, Abdul Assiz, became Abdul As-*was,* through the medium of a convenient pair of scissors. Added to these are at least a dozen princes of the blood, the more prominent of whom perhaps was Prince Gaston of Bourbon, the son of the late King of Naples, who was married to the Infanta Isabella of Spain, and who cut his throat in the presence of his wife. Other notable instances of self-destruction are those of Gen. Sir Hector MacDonald, the late Duke of Bedford; Count Wolkenstein, the Chamberlain of the Court of Vienna; the Marquis of Londonderry, the Earl of Munster, the Spanish Duke of San Carlos, Grand Chamberlain to King Alphonso; the Marquis Rappolo, stepfather to Queen Marguerite of Italy, Baron Bruck, the Austrian cabinet minister, and others too numerous to mention. The saddest case of all perhaps was that of gallant old General Bourbaki, one of the greatest heroes of the Franco-German war of 1870, who attempted to blow his brains out when the raw and untrained conscripts intrusted to his command fled *en masse* across the Swiss frontier. Luckily he recovered from the severe self-inflicted wound and lived for many years, as his biographer states, honored both at home and abroad as a particularly gallant and splendid specimen of the old French soldier.

Up to the present time, however, the inhabitants of the United States seem to have found their lot a happier one than the subjects of the European Powers, though if the reports in the newspapers can be trusted, we seem now to be running them a very close second. Thus we have had more than one case of hara-kiri, with a strict adherence to all the details of the Orient. While the "happy despatch" has been busy with the unhappy denizens of the Mongolian washhouse districts. Even the naval service of the

United States has not proved exempt, and the rule of three was sadly exemplified in the ward-room of one government ship alone.

We have had deaths by drowning, by the use of the pistol, with the poisoned cup, by cold steel, and now, as a culmination, we are brought face to face with the self-attempted taking off of Mrs. Sarah Montgomery, of Elton, Ind.

Mrs. Montgomery was a woman, and, therefore, to be wooed, and, having been won by love's insidious charms she seems to have been possessed of its sweet unrest to a degree to change its rosy hues to the jaundiced green of jealousy, and being no longer able to fear the ills she had she determined to fly—or rather steam—to those she knew not of.

But the conventional methods of suicide must have seemed to her commonplace and out of date, for in her attempt to shuffle off this mortal coil she did not follow suit, but trumped in with an originality that was all her own. Procuring a quart of gasolene she quaffed it at a single draught, and then applying a lighted match to her vapor-laden breath she surrendered herself to a Didonian, but an internal pyre of flame.

That she was sadly hurt is only natural, but let us hope that the one fire will burn out the others burning, and that when she emerges from a speedy convalesence that she will have forgotten the incendiary spark from which so great a conflagration came. At all events she can console herself in this, the hour of her affliction, with the comforting realization that she, too, has established a "record" and one that she is likely to hold in unchallenged security, of being the first and only person to make a practical, if unsuccessful, attempt to fire off the cannon that Hamlet tells us the Everlasting has fixed against self-slaughter.

ECHOES AND NEWS.

NEW YORK.

Dentition and Epilepsy.— Dr. Wm. P. Spratling, Superintendent of Craig Colony, Sonyea, N. Y., is anxious to collect information bearing on the influence of the first dentition periods, from the 6th month to the end of the first year, on the production of convulsive seizures, epileptic and non-epileptic.

Beth Israel Training School.—The graduating exercises of the nurses of this school were held in Clinton Hall July 12, 1904.

Tuberculosis Hospital on North Brother Island.—Health Commissioner Darlington has advertised for bids for the building of a "rest cure pavilion" on North Brother Island. The pavilion is needed as an adjunct to the hospital for consumptives which has been established on North Brother Island.

Pneumonia Investigation and Prophylaxis.—The Board of Estimate appropriated $10,000 last week to pay the expenses of a commission of medical experts to pass on the question whether or not pneumonia is a contageous disease. The appropriation was asked for by Health Commissioner Darlington, who showed that, although pneumonia is generally regarded as a complaint only prevalent in the winter, the number of deaths from this cause have been unusually numerous this year, and the cases have also been confined to particular localities. The inference Dr. Darlington has drawn from his observations is that the disease may be contagious. Before going to the expense of disinfecting houses in which deaths from pneumonia occur, however, Dr. Darlington suggests that an expert commission be appointed to study acute lung diseases, and especially pneumonia, with a view to ascertaining how such diseases are communicable.

Summer Corps Work in Brooklyn.—Officials of the Health Department in Brooklyn are making a determined effort to decrease the mortality among infants in that borough this summer. Nineteen physicians have been placed on the summer corps of medical inspectors, which is nearly twice the number ever before employed. Particular attention is being paid to the milk supply. Last week the inspectors started out to test all the milk that is being offered for sale in the stores. Their orders were to take the temperature of the milk, and if it is above sixty degrees it is to be condemned. The cans are to be hermetically sealed, the Health Office notified, and the permits to sell milk will be cancelled at once. Dr. E. P. Harman has been placed in charge of the summer corps, and he has apportioned the men so that the crowded sections of the borough, where the infant mortality is the greatest, will receive the most attention. Seven nurses have been assigned to this part of the work, and the mothers will be instructed how to feed and dress the small children during the warm weather. Impure and improperly cared-for milk is believed to be the greatest cause of death, and for this reason particular attention will be paid to the milk supply. The milk will be tested at frequent intervals and special precautions will be taken during the exceedingly hot weather. It was for the purpose of making this part of the work more thorough than it has ever been before that the medical inspectors who had been employed in the schools were kept at work during the summer months.

PHILADELPHIA.

Improvements at Hospitals.—Extensive improvements are soon to be made at both the Presbyterian and German hospitals. At the former will be erected a four-story brick maternity building; the latter will make alterations and additions costing $20,000.

Sale of Liquor by Druggists.—The internal revenue collector in this city, in answer to complaints, has received word from the federal authorities that it is a misdemeanor for Druggists to sell spirituous liquors as such, without adding anything to make of them a medicine. The complaint originated from the selling of whiskey and the like on Sunday. Wholesale druggists believe the federal government has no right to interfere with druggists who are allowed by the state to sell pints of whiskey on physicians' prescriptions.

Relatives to Support Insane.—Philadelphia has made a move in the effort to compel certain persons to support at the Norristown asylum friends or relatives who have hitherto been supported by the city. Twenty-one persons have been summoned to court on July 26 and many other cases are being investigated. It has recently been found that the city is paying thousands

of dollars that should be paid by those who are fully able to do so.

Filtered Water for West Philadelphia.—It is announced that in four weeks every part of West Philadelphia will be furnished filtered water. For some time past that part of the city has been receiving a mixed supply.

CHICAGO.

Appointment of Dr. Croftan.—Dr. Alfred C. Croftan has been appointed physician-in-chief to St. Mary's Hospital; and Dr. A. J. Ochsner, surgeon-in-chief.

Fatalities Due to Lockjaw.—There have been seven deaths reported to Coroner Traeger as the result of accidents sustained on the Fourth of July by celebrators. All of these cases of tetanus were attended by much suffering.

Reduced Infantile Mortality.—To save the lives of the children of Chicago's poor, the Milk Commission of the Children's Hospital Aid Society has begun its summer campaign. Through the work of the Commission last year in supplying pure milk and educating mothers to give their babies proper diet during the hot months, the infantile death rate was reduced, and this year the work of this new philanthropy will be carried on with greater energy and upon a larger scale. The coming of Dr. Lorenz to Chicago first called public attention to the fact that comparatively little was being done for the sick and crippled children of Chicago. A public call sent out from the Chicago Woman's Club resulted in the organization of the Children's Hospital Aid Society, which was incorporated in January, 1903. Distribution of 223,200 gallons of milk was the great work accomplished last summer between July and November, and this with only six persons paid for their services. Strained, filtered, Pasteurized, sealed in bottles and distributed to thirty-five stations maintained throughout the city, and all done within twelve hours from the time the milk is furnished by the Jersey herds in Wisconsin, this systematic charity work presents features of organization more complete than evidenced in any other undertaking for the benefit of the city's poor. The milk is sold in various modifications, the aim being to render it in all cases as near the strength of mother's milk as possible. Modification No. 1 is suited to young babies, with an increasing strength ratio up to the whole milk, suitable for older children, adult typhoid fever patients, or other invalids desiring and needing a fresh, pure, wholesome milk. The charges made for the modifications are all nominal and very low. Modification No. 1 sells, in a three-ounce bottle, sufficient for a single feeding of a young child, for one cent. No. 2 comes in a six-ounce bottle for 2 cents. No. 3 has a similar valuation. An eight-ounce bottle of No. 4 calls for a payment of 3 cents, and No. 5 costs the same.

Work of Children's Aid.—The first work undertaken by the Children's Hospital Aid Society was a thorough investigation of Chicago's facilities for caring for sick and crippled children. It was found that out of the 27 city hospitals visited, children's wards were maintained in only 18; the total of 320 beds thus furnished included the resources of the Home for Destitute Crippled Children. Only one Chicago hospital, the Maurice Porter, is devoted exclusively to children, and the only two places of refuge for children afflicted with infectious diseases may be found in the Memorial Institute, maintained in connection with the Presbyterian Hospital by Mr. and Mrs. Harold F. McCormick, and the City Smallpox Hospital at Dunning. Children suffering from infectious diseases must still be sent to Cook County Hospital or to the Dunning Infirmary unless eligible for one of the ten beds, exclusively retained for scarlet fever patients, of the Memorial Institute. The work of the Children's Hospital Aid Society during its first year and a half has resulted in greatly improved conditions, and in all hospitals at present maintaining no children's wards the little ones are to be received shortly. Eight old-fashioned and not altogether perfect wards in other hospitals are to be rebuilt or replaced by the pavilion system.

Officers and Directors.—The officers and directors of the Society are: President, Dr. Frank Billings; Vice-President, Mrs. Geo. W. Plummer; Secretary, Mrs. Harold F. McCormick; Treasurer, Mr. E. T. Keith; Directors, Drs. John Ridlon, and W. S. Christopher, Judge O. N. Carter, Mrs. W. P. Henneberry, and Mr. Medill McCormick. The Milk Commission is headed by E. P. Bicknell, of the Chicago Bureau of Charities, with Mrs. George M. Moulton as managing director, and Dr. Frank Billings, Miss Fulmer, Dr. Isaac A. Abt, Mrs. Geo. W. Plummer, and Mr. Medill McCormick to complete the Committee.

Hospital for Children.—Some time in the near future the Society hopes that a special hospital for children, with long-needed improvements in the facilities for treatment of chronic child invalids, crippled and mentally defective children, and public school children in need of the eyeglasses their parents lack means to provide, may be brought into existence in Chicago. But for the present its efforts are generally directed to ameliorating prevailing conditions. The education of the poorer portion of the public must come first of all, in the opinion of those who know whereof they speak.

Chicago Milk.—During a period of about two months covered by his reports, Professor Jordan, of the Bacteriological Department of the University of Chicago, found that about 31 per cent. of the 291 samples of milk examined by him were below the city standard in respect of total solids. During the same period the findings of the Municipal Laboratory indicated a quality of milk just about four times as good. The Chicago *Tribune*, in commenting on the milk question, has this to say: "Were the city inspectors four times as fortunate in the samples of milk which they happened to collect? Was Professor Jordan four times as rigid in the use of alkaline tablets, nutrient gelatines, and Quevenne lactometers? Or does the habit still survive among the city inspectors of taking a pleasant little morning drive in their municipal buggies along the boulevards, and of incidentally picking up a few samples of the superior kind of milk which is served to boulevard customers? Whichever of these questions may touch the right spot, it remains true that a discrepancy exists which, out of regard for the health of Chicago, ought to be explained. Is our milk as rich as the city inspectors think, or is it as thin as Professor Jordan's laboratory indicates? And, further, should not the city, as soon as it can afford to do so, provide for an inspection of milk not only with regard to its percentage of total solids, thereby establishing its nutritive value, but also with regard to its bacterial inhabitants, to prevent the spread of disease through milk."

Milk Fund Too Small.—Bacteriological tests of milk are made as regularly as possible with a small staff of inspectors and bacteriologists, according to Health Commissioner Reynolds, who thinks the Health Sanitation Committee of the Civic Federation, in its recent criticism should have taken into account the small appropriation for inspection. The Committee secured tests of 291 samples in two months, and found many of them below grade with regard to butter fat and solids. That four times as much milk escapes supervision as is tested is considered an exaggeration when

based on the investigation of 291 samples, but Dr. Reynolds considers that some milk is bound to escape the inspectors because of the small staff of men given him to work in conjunction with the City Laboratory.

Pamphlet on Tuberculosis.—The Illinois State Board of Health recently issued a pamphlet written especially for the laity, and intended for distribution broadcast, in which consumption is described, its ravages clearly pointed out, and rules for its prevention and limitation of its spread detailed. The State Board of Health announces that it will make free examinations of sputa in needy cases.

GENERAL.

Honor for Dr. Osler.—Dr. William Osler was one of the four who received the degree of LL. D. at Harvard this year. President Eliot pronounced him "the leading medical consultant author, teacher and orator of this continent."

Cholera Epidemic in Persia.—There is an epidemic of cholera in Teheran, Persia, according to a dispatch from there on July 8. The deaths number several hundreds daily.

X-rays in Leucemia. —A dispatch from Turin dated July 11 states that Dr. Bozzoli, director of clinical medicine at the Turin University, has informed the Academy of Medicine that experiments he has made have shown that the X-rays have remarkable efficacy in some serious diseases of the blood. He says that he has cured by this means a supposedly incurable case of leucemia.

Model Field Hospital.—The army hospital detail which left Washington a few days ago for Gettysburg to participate in the encampment of the National Guard of Pennsylvania, is a thoroughly equipped outfit. The detail consists of ninety-two men, including two officers, and is intended to serve for educational purposes. The company took a model field hospital of 108 beds, which will be set up at Gettysburg. It includes operating rooms, laboratory, diet kitchen, and acetylene gas plant for allumination, and all its departments and rooms will be connected by electric bells. It is said to be the most complete field hospital ever erected, and its demonstrations will be of great service to the medical officers of the National Guard. The hospital is in charge of Assistant Surgeons H. L. Gilchrist and Charles B. Reynolds.

Morristown, N. J., Medical Society.—At a meeting of this society July 16, some definite action was taken relative to payment for professional services. One of the members present is quoted as saying: "I want it especially impressed on the people that we are going to have a blacklist, and those persons who do not pay their medical bills will have no attention paid to their calls for aid. This is merely a matter of protection. There are many persons who call in a different physician every time a case of sickness occurs, and never pay any bill. That is not right. Those who want medical attendance should be willing to pay for it, and if they will not pay willingly, then they should be made to pay. Our list will put a stop to most of the deadbeat business." Dr. H. M. O'Reilly is President of the society.

New Jersey State Medical Licentiates.—At the meeting of the State Board of Medical Examiners held at Long Branch, July 5th, the following candidates for a State medical license, who passed the examination at Trenton on June 21-22, were licensed: Edward John Beardsley, David Fuller Bentley, Norman Sinclair Betts, Louis Nicholas Blank, Guy Otis Brewster, Frank Halstead Brown, Hayes Joseph Burnett, Charles Lawrence Constantinides, Frank Bacon Cook, Henry Augustus Craig, Percy Edward Dèckard, Lawrence Daniel Doyle, Lancelot Ely, James Ferrier, Albert Ferdinand Garton, Samuel Greenburg, Isaac Norwood Griscom, Kenneth Sylvan Guthrie, Clement Jacob Hailperin, Harvey Whesley Hartman, Walter P. Evans, Ephraim Clark, Charles Albert Knox, William Paul Lamb, Charles Jacob Larkey, John Joseph Magner, Harry Ross North, Harry Zebulon O'Brien, Homer Tomlinson Partree, Frederick Marshall Paul, Charles Blaine Piper, Henry Stanley Riddle, William Frederick Ridgway, Joseph Potter Riggs, Walter H. Smith, Lester Hevlyn Sparks, Newton Henry Stein, Louise Martha Sturtevant, Walter Albert Taylor, Henry Woodbridge Thayer, William H. Wells, Stephen S. P. Wetmore, Herbert Willis. The following attained the Honor Roll, or a general average of 90 and upwards: Dr. Louise Martha Sturtevant, A.B. of Wellesley, and M.D. of Boston University School of Medicine, attained 91.6; and Dr. Henry Augustus Craig, M.D., of Columbia University, attained 90.7. The following officers were elected for the ensuing year: President, Dr. William H. Shipps, Bordentown; Secretary, Dr. E. L. B. Godfrey, Camden; Treasurer, Dr. Chas. A. Groves.

Race Suicide and Education.—Under caption of the "College Girl and Race Suicide" the *Sun* speaks editorially on the contention that college women do not marry. It says: "The college girls, or rather former college girls, of the country are up in arms. They resent in particular the statement made recently in a New York medical journal to the effect that American women are too highly educated; that it is because of this that they are failures from the point of view of maternity, and, finally, that 'as women's mental powers increase, their bodily powers decrease.' It is obvious that the case that certain persons try to make out against the college women in particular must fall to the ground if it can be shown that a larger proportion of them are healthy, marry and have families than is the case with their sisters who never went near Vassar, Wellesley, Bryn Mawr, Barnard or Radcliffe. It would be no more absurd to attribute the low average birth rate of Kalamazoo or Oshkosh, if they have a low birth rate, to the fact that the owners of apartment houses in Manhattan and Brooklyn don't like tenants with children, than it is to say that the reason women who have never been to college don't have large families is because Greek and mathematics and modern science have knocked thoughts of marriage out of the heads of some college women. The fact remains that the average college woman is just as feminine as her sister, and if she is just as feminine she cannot be without the tendency to regard man, not as an enemy, a negligible quantity or an inferior animal, but as something very much more important than a necessary evil."

To Keep Mosquitoes Out.—In carrying out its plans for the sanitation of the Panama Canal Zone the Isthmian Canal Commission will shortly advertise for bids for 100,000 yards of wire netting with which to screen the various buildings along the line of the canal, so as to protect the officials and employees from the mosquitoes, which carry yellow and malarial fever. This will be probably the largest single order of wire screening ever placed. Experience has shown that ordinary wire screens do not last more than six months in that moist climate, and Gov. Davis of the Canal Zone has recommended the use of galvanized steel, brass or copper wire, which will be much more durable. The work of sanitation now going on under the direction of Dr. Gorgas includes not only a general cleaning up of the towns and villages, but a systematic anti-mosquito crusade. Ponds and pools of standing water are being covered with kerosene, etc. Work has also begun on the drainage of swamps and like mosquito breeding places

in the zone, which will require something like a year to complete. So far there have been but few cases of yellow fever and but one American has died from the disease.

Professor Koch and the Royal Commission.—The *Sun* expresses its views on this subject as follows: The question whether or not tuberculosis can be transmitted from animals to man is obviously of immense importance to all those interested in the question of public health, especially in the great cities. Prof. Robert Koch, who succeeded Virchow as member of the Berlin Academy of Science and who has been for some time director of the Prussian Institute for Infectious Diseases, is the leading authority in Germany to take the negative view. He holds that there is no connection between human and animal tuberculosis. Some time ago the Prussian Government appointed a Royal Commission to inquire into the subject. When its ad interim report was published the other day Prof. Koch was absent from Berlin. The experiments carried on by order of the Minister for Public Instruction seem to have been inconclusive. Prof. von Orth, Virchow's successor in the chair of pathology at Berlin University, holds that they tend to make out a case against the Koch theory. On the other hand, all the other authorities in Berlin take the opposite view and consider that Koch's position is impregnable. On his return to the capital Prof. Koch announced that the report confirmed him in his original position. He took the opportunity to restate his conclusions as follows: that the transmission of bovine tuberculosis to man cannot take place by means of food; that neither bovine flesh nor milk can transfer the disease; that is was possible for a butcher at the slaughter houses to become infected by injuring himself when handling tuberculous meat, but even then the infection remained local and caused no general disease. With regard to the report of the Royal Commission, he said, emphatically: "It does not contain a single fact to make me change my opinion, which is based on very careful experiments, not only made by myself and my assistants, but also by other medical men of the highest standing. It is for my opponents to prove that I am wrong. I have tried for years to find a case in which tuberculosis was transferred from animals to men. Three years ago the Prussian Minister for Public Instruction, at my request, instructed all physicians in charge of the large public hospitals to report all cases which came to their notice of bovine tuberculosis having been transmitted to man, and up to this day we have been waiting to hear of the first case. As long as the Royal Commission does not show me a case in which such infection is proved, I can not believe in its assertion. If it be true, as is stated by veterinary surgeons, that a half of 1 per cent. of all cows suffer from bovine tuberculosis, while the Prussian Royal Commission could not point to one case of infection from the drinking of the milk of such animals, it looks as if there were good grounds for Prof. Koch's protest against certain precautions now in legal force nearly everywhere. He holds that the millions wasted by the killing of the animals and for the sterilization and pasteurization of milk ought to be saved and turned to really practical use in combating the dread disease and obtaining mastery over it.

OBITUARY.

Dr. Edward W. Lambert, one of the oldest and most prominent physicians in New York, died from heart disease at his home, 126 East Thirty-ninth Street, on Sunday night, July 17, 1904, after an illness of about a week. Dr. Lambert celebrated his seventy-third birthday on Feb. 15 last, having been born in Boston, Mass., in 1831. At the age of twenty-three he was graduated from Yale University, and immediately began the study of medicine at the College of Physicians and Surgeons. After receiving his diploma he served as visiting physician in Bellevue Hospital, and began the practice of medicine for himself in 1857. In college and in the office of Dr. Willard Parker, where he was an assistant, Dr. Lambert was associated with Drs. Henry B. Sands and William H. Draper. At the time of his death he was attending physician at St. Luke's Hospital and the Nursery and Child's Hospital. Dr. Lambert became associated with Henry B. Hyde in 1859, who in that year founded the Equitable Life Assurance Society, and was made the society's first medical director. During the period of forty-five years since then he had remained chief of the Equitable's medical staff, although for the last six months he had acted, for the most part, as consulting medical director. Dr. Lambert had a country residence at New Canaan, Conn. He was a member of the University Club, the Century and Yale Clubs, the New England Society, and the New York Academy of Medicine. He is survived by four sons and four daughters, three of the daughters being married. Of the sons, Adrian, Samuel, and Alexander Lambert are physicians in this city, while the fourth is a manufacturer of Manchester, N. H.

SOCIETY PROCEEDINGS.

NEW YORK PATHOLOGICAL SOCIETY.

Stated Meeting, held April 19, 1904.

The President, O. H. Schultz, M.D., in the Chair.

Polycythemia in Congenital Heart Disease.—Dr. Isra S. Wile read a short paper on the polycythemia of congenital heart disease. He briefly reviewed the theories which have been devised to explain the phenomena and came to the conclusion the one which assumes the inspissation of the blood as a cause of polycythemia could not be regarded as explaining all of the facts. His own view was that the polycythemia was an expression of a physiological hyperplasia of the oxygen carrying red cells of the blood to compensate for the imperfect aeration which takes place in the lungs in congenital heart disease. The same compensation is required for the lowered hemoglobin content of the individual corpuscles in the blood as is seen in these cases.

Dr. E. E. Smith, in the discussion, said that Dr. Vogel had referred to the fact that in the application of the method, a variable amount of the reagent added was used to react with other constituents than albumen. This was a variable factor and interfered with the accuracy of the test to a certain extent. Dr. Smith inquired whether Dr. Vogel had considered the advisability of running a control by separating by the heat method the albumin from a portion of the urine, filtering it off and running a control on the filtrate as a factor for correction. That would take but a few moments,—acidify the urine with acetic acid, heat and filter and run a control on the filtrate. It seemed to him that would afford a correction.

Dr. Vogel said he understood what Dr. Smith meant and it might possibly afford a factor for a particular urine.

Dr. Smith said that he wanted to call attention to the fact that Esbach's method so generally used in office examinations was quite unreliable owing to the fact that the tubes manufactured are made on a wrong principle at the present time. The original principle upon which the Esbach tubes were made was the fact that the albumen precipitates out by gravity a certain

distance in a certain time. The tubes should have the U mark at a certain uniform height. The manufacturers had made the mistake of supposing that the U mark should represent the capacity of the tube. Consequently instead of being at a fixed height the U marks in the tubes now used varied greatly in position, with the result that there was a variation of 50 per cent. more or less, in the results obtained in the different tubes. Dr. Smith thought the fact important and that perhaps those who had not considered it would like to have their attention called to it.

Dr. P. A. Levene said that for clinical purposes the Esbach method was quite satisfactory. The presence of a few milligrams more or less of proteid in the urine does not indicate any alteration in the conditions of the kidneys. It was of importance to have a general knowledge whether the urine contained small or large quantities of albumin, and a similar knowledge of the decrease or increase of the substance in disease. Such knowledge it was possible to obtain by Esbach's method. Dr. Levene did not believe that it would be possible to devise a reliable volumetric method for the estimation of proteids, for the reason that proteids combine with other substances very slowly.

Dr. George Mannheimer said that he had not often made quantitative estimates of albumin in urine, because they seemed to him not of great clinical value. The amount of albumin he considered diagnostic only in certain conditions of the kidney; *e.g.*, congestion due to heart disease, where it varied with the state of the circulation. In cases of chronic nephritis, the degree of albuminuria varied so much from day to day that it could not serve as a guide to the severity of the disease. Von Noorden brought out, years ago, the fact that the variations were so great as to be almost characteristic of chronic Bright's disease. In a few cases where it had seemed of interest to estimate how much albumin was passed in twenty-four hours, he had determined the total nitrogen by the Kjeldahl method, first with the albuminous urine, and then with a thoroughly disalbuminized specimen of the same twenty-four hours' collection. The difference between the two results indicated the amount of albumin. This procedure had been compared with the weighing method as a standard and the error had been found to be less than 1-100 of one per cent. Esbach's method in spite of its faults seemed a convenient clinical one to use for continuous estimation in a given case. If employed always under the same circumstances, the same mistake would always be made and it could thus be used for comparison. Dr. Mannheimer asked Dr. Vogel whether he had tested the method he described against any other reliable one.

Dr. Smith said he had not anticipated Dr. Levene's remarks on the Esbach method. In view of the fact that Dr. Levene inferred that the Esbach method was used by all, he thought it would be well to describe the method he used in his routine work. It was quite simple and had an advantage over the Esbach method in that it took less time to get final results. It was practically a simplified gravimetric method. He took a small quantity of urine, an amount that he estimated would contain about 20 milligrams of albumin. This he diluted with a saturated solution of common salt, coagulated with heat and acetic acid; let it stand on a water bath for a few moments until the coagulum was well formed, and filtered through a Gooch crucible, or through a small, weighted, folded filter. The precipitate was washed with hot water, alcohol, and ether. All this took but little time and for any one who did it in a routine way it was very simple. The Gooch or filter was dried in an oven for three hours at 110° F.—a much more than ample time to thoroughly dry the precipitate. It is then cooled and weighed, and in the case of the Gooch, ignited and reweighed. This gave a ready method for the estimation of albumin; in the laboratory it could be done in half a day; and the method was much more satisfactory than that of Esbach, and one that the speaker thought would be followed with advantage by those who had the equipment of a laboratory.

Dr. Vogel said that the control determinations were made by the method of Scherer, which consists in carefully acidulating with acetic acid and then coagulating the albumin by heating on the water bath for one-half hour. The speaker added a certain amount of salt solution before heating in order to ensure complete precipitation of the albumin. The fluid was then filtered through a dried, weighed filter; the precipitate washed with water, alcohol and ether, dried to constant weight, and the amount of albumin determined. That, he thought, was the method usually considered the most accurate. Incineration of the filter was not necessary if the amount of precipitate were not large and the washing was thoroughly done. The study had seemed advisable for the reason that this method of Wassiliew's has been reproduced in a number of different textbooks, always without any special comments, which indicate that it had been accepted. Dr. Vogel had thought it did not seem right to have the method go on, perpetuated indefinitely, without investigation, so he undertook it. The result had been rather unsatisfactory to the method.

As to Dr. Levene's remark that no titration method of determining the amount of albumin was likely to be successful, Dr. Vogel said in this investigation everything had pointed to that fact. It appeared that the union of the sulphosalicyclic acid with the proteid took place quite slowly and evidently incompletely, so that there was no definite means of knowing when complete union had taken place. Probably, also, the fact that albumin which originates from different sources may have different affinities for acids, entered into the question.

As to Dr. Smith's remarks, Dr. Vogel said that in carrying out the determinations a large number of parallel determinations with the Esbach tube had been made. He could only corroborate what Dr. Smith had said as to the unreliability of the Esbach method. The gravimetric method described was extremely accurate but, for the practitioner, entirely impracticable. He thought a method which could be applied to the purposes of daily routine use without such expenditure of time, and yet would afford fairly reasonable accuracy, was the desideratum. Some German authors used tables from which the amount of weighed albumin corresponding to given bulks of precipitate settling in the test tube after boiling, and roughly gauged by the eye, might be determined. This method was open to gross errors, but was said not to be more so than the Esbach. It was not necessary for clinical use to know the exact number of milligrams to the liter but to know whether the amount was increasing or diminishing from day to day.

Some Observations on Complement.—Dr. Edna Steinhardt read some observations on complement. The work had been carried out in the Research Laboratory of the Health Department, through the kind permission of Dr. W. H. Park, whom she wished to thank for his courtesy and for his many suggestions and criticisms. Her thanks were also due to Dr. Anna W. Williams for her suggestions during the course of the work.

The points under consideration were: (1) The effect on the complement of passing serum through a Berke-

feld filter. (2) The differentiation of bacteriolytic complements by means of a filter, by heat, and by preservation. It was found that the fresh serum of the horse was lytic to the stock typhoid culture, so this combination was used in the following experiments. When fresh lytic serum was passed through a small Berkefeld filter, the first 10 c.c. had lost its lytic action, the second 10 was partially active; the third more so, while the fourth 10 was unimpaired in its lytic strength. This gradual passage of the lytic property of the serum through a Berkefeld filter accords with the same fact noted by Graham-Smith, for the precipitins,[1] and by Park and Collins for the agglutinins.[2] There are, however, in lytic action, two factors to be considered, the immune body and the complement. The question is: Is the first filtrate lacking in one or both? Ehrlich and Morgenroth and Ainley Walker state that the immune body is present in the filtrate; while Pfeiffer, who filtered small quantities of serum, noted considerable reduction of the immune body. To test this point, portions of the first 10 c.c. passed through the filter were added to fresh lytic serum and the Neisser and Wechsberg phenomenon of deviation of the complement, due to excess of immune body, was produced. Therefore, though there may have been a diminution of immune body in the filtrate, still there was sufficient present to produce lysis, if there had not been a lack of complement. Ehrlich and Morgenroth state this retention of complement to be due to absorption to the filter. This was proven to be so by passing 10 c.c. of a lytic serum through a small Berkefeld filter. Five c.c. of this filtrate were then drawn through the filter in the reverse direction. The first filtrate was tested and found to be non-lytic; while that portion which had been passed back through the filter was lytic to a certain extent, though not to the same degree as the original serum. This difference in strength is easily explained by the fact that it would be impossible with such a small amount of fluid to wash the filter clear.

This same fact of absorption was shown by another method: namely, 10 c.c. of the lytic serum were drawn through a Berkefeld filter. The filtrate was removed, and proven to be inactive. Then 25 c.c. of .8 per cent. NaCl solution were drawn through this filter in the same direction. This washing was evaporated to dryness in a vacuum over sulphuric acid at room temperature, and the residue when dissolved was distinctly lytic. To control this, lytic unfiltered serum evaporated in the same manner was shown to still retain its lytic properties, while neither inactive evaporated serum, nor concentrated NaCl solution had any lytic effect when tested. It was also shown that if 25 to 30 c.c. of inactive serum were passed through a filter and then 10 c.c. of a lytic serum were drawn through, this last serum would still retain its lytic quality. In other words, the coating of the filter is purely mechanical, the filter having no selective action for the complement. The complement, however, usually exists in serum in so much smaller proportions than the immune body that in the first few cubic centimeters of a filtrate it is probably present, though in such minute quantities that it is impossible to detect it with our present technic.

Ehrlich and Morgenroth found that they were able to differentiate two hemolytic complements by filtering serum. This was corroborated by Neisser and Döring. Later Vedder repeated this for the bacteriolytic complements. There are three hypotheses that suggest themselves as possible explanations for this separation of complements by a filter: (1) The difference in size of the molecules of the different complements. (2) The difference in the adhesiveness of the molecules. (3) The difference quantitatively of the various complements.

As to the first, it seems rather improbable that a molecule should be large enough to block the pores of a Berkefeld filter, which are comparatively coarse. The second may be the explanation; but the next hypothesis seems the more probable one, as indicated by the results so far obtained.

In rabbits' serum the greatest lytic action occurs for the typhoid bacillus, less for the dysentery, and least for the colon; and when Vedder filtered rabbits' serum, he found absence of lysis for the colon, impaired for the dysentery, and unimpaired for the typhoid organisms. To take the agglutinins as an example, in a serum which contains twice the amount of agglutinins for Flexner "Baltimore" as it does for Penman (two dysentery organisms), when a few c.c. of this serum were filtered and this filtrate tested, it was found that the agglutinins were reduced proportionally; that is two-thirds of each had been retained in the filter. It would be possible by the testing of successive filtrates to find that point where no visible reaction could be obtained with Penman, but Flexner "Baltimore" would still in certain dilutions be agglutinated; thus apparently differentiating by a filter between the two agglutinins. The tests for small amounts of agglutinins are, however, much more delicate than those for complement. For this reason, with the present methods a trace of complement could not be detected and would be called absent. Therefore it seems probable that the differentiation by the filter of bacteriolytic complements is a quantitative rather than a qualitative one.

Tests were also made upon the differentiation of bacteriolytic complement by heat, and here the typhoid complement was found to be more resistant than the colon or dysentery complement, but the serum originally was more lytic toward typhoid than towards either of the other two. Also, the complement for the typhoid bacillus was present longer in preserved serum than was that for the dysentery organism.

It may be that the differentiation of bacteriolytic complements by heating, and by permanency, as well as by filtration, is explainable by the same theory of quantitative differences in their amounts originally present in the serum. However, as yet this is only an hypothesis suggested by the similarity of results obtained in all three experiments, and further work will have to be done on the points, before this theory can be proven or disproven.

In conclusion, the results obtained were summed up as follows: (1) The gradual passage of bacteriolytic complement through the Berkefeld filter. (2) The retention of complement of the first portions of the filtrate by the filter being due to absorption. (3) The probable explanation of the differentiation of bacteriolytic complements by filtration is their quantitative differences in the original serum. (4) The similarity of results obtained by the effects of heat and by the effect of time on certain bacteriolytic complements, suggests their explanation on the same basis.

Dr. P. A. Levene, in the discussion, remarked that the observations of Ehrlich that certain complements did not pass Berkefeld filters might be explained by the supposition that they were in colloidal solution. The more soluble complements would pass through the filter more readily. It was not of so much importance to know whether the Berkefeld filter is absolutely or partly impermeable for a complement, as it is to be able to separate the substances by means of filtration. Ehrlich might have achieved this owing to his great experience

1 Journal of Hygiene, July, 1903.
2 Proceedings of the New York Pathological Society, Jan., 1904.

in handling these substances, and to his knowledge of their behavior under different conditions.

Dr. Steinhardt replied that there was no doubt at all of the separation of complements by means of a filter, as shown by Ehrlich, and repeated by other workers. The question had been only of the reason for this separation. The supposition of the colloidal nature of some of the complements causing their retention in the filter might be correct. It was rather difficult, however, on that basis, to understand the passage in the first few cubic centimeters of serum, of the complement for the typhoid bacillus through a filter previously coated with inactive serum, which complement would be completely retained by using an uncoated filter. Also, the proportionate reduction in filtered agglutinins and the similar results obtained for bacteriolytic complements suggested the probable explanation as being a difference in the several complements of quantity rather than quality.

On the Presence of Mallory's Cyclaster Scarlarinalis in the Skin of Scarlet Fever Patients.—This was the subject of Dr. Cyrus W. Field. He said that these bodies were described by Dr. Mallory before the Society of Medical Research in Boston, on the fifteenth of December, his paper being published in the January number of the *Journal of Medical Research,* 1904. He had found the bodies first in the skin of a boy who had died on the third day of the rash. There were three specimens examined, one each from the thorax, abdomen, and thigh. One of these pieces showed the bodies present in the epithelial cells, between the lymph cells, and in the lymph space of the corium. In another piece there were a few and in a third none at all. Dr. Mallory had examined this specimen as he wished to compare forms of degeneration in scarlatina with those found in variola, and had found bodies he had noticed before. He had had three other cases in which the same bodies were found. These scarlatinal bodies stain only by the eosin methylene blue stain and can not be demonstrated by the hemotoxylin or Borrell stain. Dr. Mallory had tried a number of other stains, as had Dr. Field. Alcohol hardened sections could be used, but alcohol is not a good fixative, Zenker's giving by far the best results. Dr. Mallory had stated that the bodies first appeared in the epithelial cells of the deeper layers, as small rosette like bodies connected by more delicate lighter blue staining material with a central point. In a later stage they break up and then enlarge in the cell. These large bodies were homogeneous, staining with methylene blue, and as they increased they became reticular. They were both intra- and extracellular and the latter showed what appeared to be ameboid motion. The determination of the exact pathological significance of these bodies is a very difficult matter and it cannot be proved on purely morphological grounds. In sections of corneas treated with diphtheria toxin, Dr. Ewing has shown that we can get keratinization which simulates the ameboid forms. It is supposed that they enter the cells and there become larger, thickening, and giving out a smaller reticular structure; then they enlarge gradually, become more dense, homogeneous, shrink, and finally form rosettes again; how many times they pass through the cycle Dr. Mallory was not prepared to say. He had found them in four cases in the skin, in the epithelial lymph sinuses of the tongue in one. Dr. Field had examined skin from the groin of five scarlet fever patients dead from the disease, two patients dying on the third day of the rash, one on the second day, two on the fourth day. In all five cases he had found these bodies. Dr. Mallory had examined them and had agreed that they were similar to those he found. Dr. Field had also examined the skin of four patients living at the time the skin was taken; in one case on the first day, in two cases on the fifth day, and in one on the sixth day of disease. In none had he been able to demonstrate the presence of these bodies. The skin had been taken from the thorax and not from the thigh. He had been able to find reticular bodies in the cells, a few outside of cells, and a few he was not sure of, and he was not sure at all what they were in the lymph sinuses. He had been unable to find any of Dr. Mallory's rosettes. In Dr. Field's opinion these bodies were much more definite and delicate in structure than any degeneration he had seen. They stained in a manner similar to the malarial parasite, but not so intensely. They do not take up methylene blue so intensely. What their origin is, or how they pass into the skin, Dr. Field did not know, except that from the appearance of the skin they seemed to have entered by way of the lymphatics. He thought the significance of the bodies might be determined from the morphological status in time, but he thought the problem would require a good deal of control work on sections of skin from a variety of conditions. He did not accept them as protozoa or degeneration, and at present was a complete agnostic on the subject.

Dr. I. Levin, in the discussion, said that ten years ago he did a great deal of work on the protozoa of cancer. When he turned to this study two facts struck him, (1) that the so-called protozoa of cancer resembled to a great extent the formations found in smallpox or scarlet fever, so that without the inscription he could hardly distinguish one from the other; (2) he found in his study of the protozoa of cancer, that it was easiest to find these pictures in skin cancer—ulcus rodens. This might be caused either by the fact that the epithelium of the epidermis undergoes sooner different processes of degeneration or that the protozoa penetrate the skin more easily than the other tissues. It rather spoke against the parasitic theory that the ulcus rodens is comparatively a benign cancer. In this question as in a number of others in pathology, the morphologist was powerless to solve the problem unaided. Until such time as experimental pathology could find some way to get nearer to the physiology of the parasite, we would spend a great deal of time and energy and say at the end: "I do not know whether it is a degeneration or a protozoon."

Dr. Field said that he thought Dr. Levin had put it too strongly in saying the student could not decide the question. Dr. Field thought that with control work the question could be decided. The malarial parasite had been found to be an etiological factor in malaria. Had it been impossible to discover it in the blood it would have been found to be very characteristic in the stained sections. He thought any one who had looked at Dr. Homer Wright's specimens from the Delhi boil, in which he demonstrated the parasite in that disease, would agree that these questions could be decided in that way. He thought the question under discussion could be decided in the same way if studied long enough. The bodies were striking and particularly well differentiated. Dr. Field thought, however, that it would require a great deal of work on numerous skin lesions or internal organs of scarlet fever patients before the nature of the lesion could be decided, but he did not despair of in time being able to help in the matter.

A Case Simulating Hodgkin's Disease.—Dr. Harlow Brooks showed specimens from a case simulating Hodgkin's disease. The patient was a boy about twelve years of age. He had been at the Montefiore Home for three years. The history of the case dated back to April, 1901. The onset of the disease had been sudden with vomiting, loss of consciousness and pains in the abdomen. The patient was prepared for an operation for appendicitis;

but on palpation over the abdomen the tumor formation was found and it was decided not to operate. In two weeks the boy improved and was taken home. Later, the abdomen began to grow and he stooped forward, complaining of pain on the left side in the region of the bladder. Afterward some diminution in the size of the abdomen took place but the boy still walked in a peculiar position, the thigh on the left side held rigid and the body stooped over to relax the muscles of that thigh. Subjectively he complained of nothing. Physical examination showed a poorly developed, poorly nourished, dark complexioned boy, no skeletal deformities, no skin lesions. Thoracic organs negative; veins anemic. The glands of the groin were palpable but at first without perceptible enlargement. He fattened up considerably after four years in the hospital but the abdominal circumference increased. Nothing of any importance developed in the thoracic condition. An exploratory laparotomy was performed, and, commencing at the median line in the abdomen, a glandular growth was found. A nodule was removed for microscopical examination and a diagnosis of probable peritoneal endothelioma was made. Frequent blood examinations were made but no leucocytosis was found up to shortly before death when complicating lesions caused the development of leucocytosis. Differential leucocyte counts had shown the relative percentages to be approximately normal. The treatment of the case was unimportant and without effect on the course of the disease. Dr. Brooks showed the organs from the case. The heart was negative. The lungs showed intralobular pleurisy; their tissue was salmon colored, very firm, and showed microscopical changes like those of the ordinary cardiac lung. Dr. Brooks had thought at the time of autopsy that an infiltration of lymphocytes into the lung was present, but microscopically this was not substantiated. A moderate increase in fibrous connective tissue was found; otherwise the lung was like that in ordinary cardiac cases. The glands of the neck were enlarged to a considerable degree. The precardial lymph-nodes were moderately enlarged; those at the bifurcation were markedly so. They were very firm and light pink in color. Dr. Brooks had described the liver in his postmortem examination as showing lymphoid infiltration, but this was disproven microscopically. The spleen was enormously enlarged. There were whitish nodes present in it which Dr. Brooks took to be hypertrophic Malpighian bodies. Microscopically these were found to be made up of dense masses of fibroblasts and connective tissue fibrils, and in places amyloid degeneration had taken place. On opening the stomach Dr. Brooks had found whitish patches which he took to be infiltration with lymphocytes, but which proved to be areas of fibrosis. Microscopically the kidneys were also found free from leucocytic infiltration.

The main abdominal tumor was found to be made up of the greatly hypertrophied retroperitoneal lymph-nodes which although they still preserved their general contour had grown so in size that some of them measured as much at 10 cm. in diameter. Their tissue was found to be very firm and no areas of necrosis could be made out, though in certain places the tissue was slightly yellowish. The capsules of the glands seemed to be intact throughout and although they were firmly attached to the surrounding structures and to the periosteum of the vertebræ, infiltration outside the nodes could be made out nowhere. Microscopically the structure of these nodes varied greatly though all were characterized by replacement of the normal lymphoid cells by masses of proliferating fibroblasts and connective tissue tendrils. Some of the nodes showed between this connective tissue network very numerous giant cells, having, however, no definite arrangement; nothing like tubercle formation was to be made out in any of the sections. A few of the lesser enlarged nodes showed apparently a simple hyperplasia of the lymphoid cells, such as one sees in the nodes of typical cases of Hodgkin's disease. In the left iliac fossa was a great mass of enlarged glands measuring 13 by 8 cm. The microscopical structure was found to vary in the degree of fibrosis as did the other nodes previously described. A few of the nodes here on gross examination showed a curious yellow pigment deposit, like a sprinkling of the surface with sulphur. Microscopically this pigment was found to be deposited in the cytoplasm of the lymphoid and connective tissue cells. Although these glands practically filled the iliac fossa on this side and by their pressure and that of the corresponding enlarged inguinal lymph-nodes caused the flexed position of the left thigh, in no place had the growth invaded outside tissues, not even the periosteum of the iliac bone to which the mass was firmly attached.

Dr. Brooks thought the diagnosis of the case lay between sarcoma and Hodgkin's disease, in which the hyperplastic lymph-cells had been replaced by fibrous connective tissue. He had never heard of nor seen a case in which replacement was so complete as in this instance, or one in which the picture presented by different glands varied so markedly. There was no typical fibrillar arrangement leading to the diagnosis of syphilis and this diagnosis would have suggested some disease of the bone—some skin manifestations, some syphilitic symptoms—none of which was present in this case. With syphilitic glands so large as these necrosis would probably have been found somewhere in the nodes. Tuberculosis had, of course, been considered, and Dr. Brooks thought excluded, because in this enormous mass of tissue one would expect to find something fairly characteristic of it, were it tuberculous. Sarcoma might be diagnosed, in which case it must be classed as a fibrosarcoma; but it is contrary to our knowledge of this growth to have it limited to the lymphoid tissues, as in this case. If sarcoma, we would have expected the tumor cells to have infiltrated outside of the Malpighian bodies, in the spleen, for instance. We would also have expected the growth to burst out through the capsule of the glands and to have invaded the surrounding structures. Dr. Brooks thought it a case of Hodgkin's disease in which there was replacement of the hyperplastic lymph tissue by the connective tissue hyperplasia which is found so commonly in chronic inflammatory processes.

Dr. Ewing said that he had examined the sections from Dr. Brooks' cases, and believed that both the histology and the gross appearance left no room to doubt that the case was one of Hodgkin's disease. Compared with others the tissue in this case contained many more giant cells than is usual, and these cells gave the section somewhat of a sarcomatous appearance. This histology had been regarded for many years in Vienna as pathognomonic of Hodgkin's disease, and although it seemed to be less frequent in New York, it had recently been described anew in a series of cases by a Baltimore writer.

In some cases of *constitutio lymphatica* he had seen a good many giant cells in the hyperplastic lymph nodes, and would like to know if in this case there were any of the signs of the lymphatic constitution, such as rickets or persistent thymus. The absence of necrosis, while characterictic of this type of Hodgkin's disease, did not, Dr. Ewing believed, rule out a tuberculous origin, which could only be attempted by inoculations of large amounts of the material. On the histology alone he did not think it possible to exclude tuberculosis.

Dr. Brill said that the doubt expressed by Dr. Brooks

as to the pathological nature of this case was but another indication of our lack of knowledge of the pathology of Hodgkin's disease. While the disease represents a definite clinical entity, its pathology presents a number of various and not allied or identical conditions. Clinically, the disease presents anemia without marked qualitative changes in the red and white cells of the blood, enlargement of the lymph nodes, and in almost all cases, more or less increase in the size of the spleen, accompanying progressive weakness, and finally, almost invariably a fatal issue in two or three years or less. When the disease is considered histologically and pathologically, it represents this clinical picture arising from a lymphoid hyperplasia, not induced by tuberculosis, syphilis, rachitis, or sarcoma. It is here where our knowledge is at fault, for cases clinically like Hodgkin's disease occur, which on pathological examination may prove to be any one of the conditions just mentioned; namely, tuberculosis, sarcoma, or syphilis.

However, because a change in some of the lymph nodes in a case of Hodgkin's disease may be due to tuberculosis of these nodes, we are not justified in assuming that that case is not one of Hodgkin's disease, for there is no reason why a coincidental infection with tuberculosis may not exist together with the original infection, if we may call Hodgkin's disease an infection, as it would seem to be from many of its pathological aspects.

The case presented by Dr. Brooks was extremely interesting from both the clinical and the pathological points of view and Dr. Brill asked whether Dr. Brooks could say in which groups of lymp-nodes enlargement was first noticed, whether the cervical, mediastinal, retroperitoneal, mesenteric or inguinal.

Dr. Brooks replied that he had first observed the growths in question in the retroperitoneal region.

Dr. Brill said that this was against the rule in Hodgkin's disease, where the lymph-nodes of the anterior cervical or mediastinal regions were commonly first involved, considerably before the retroperitoneal or inguinal nodes. From a clinical aspect there was no reason to call this case of Dr. Brooks' anything else than one of Hodgkin's disease.

Dr. Brooks said he felt somewhat comforted at the remarks made. He said the more he studied the glands the more each one seemed to show a different picture. He could not get rid of the idea that the case was one of Hodgkin's disease, but it differed from all cases as he had seen it, and the changes in the glands were not as usually found in that disease, so far as he had been able to examine them, having studied about thirty instances. They also differed from those of any case he had read of. In regard to status lymphaticus, the linguinal adenoids were noted as moderately enlarged in the protocol, but the tonsils were not hypertrophic, and the thymus was absent. In the detailed autopsy, only the outlines of which had been read, he did not find anything which led him to think it was status lymphaticus. The thickened areas in the walls of the stomach and gut which he had taken to be lymphoid infiltration, proved to be fibroid thickening. On the dorsum of the tongue he had found a small excavated, even-floored ulcer, which looked like a trophic ulcer. The child had never complained of this and it was only discovered post mortem. At one side of this ulcer was a small mass of connective tissue which might have been considered a tubercle if any other tubercles had been seen in other portions.

HARVARD MEDICAL SOCIETY OF NEW YORK CITY.

Regular Monthly Meeting, held March 26, 1904.

The President, Augustus H. Knight, M.D., in the Chair.

Sepsis After Operation for Adenoids.—Dr. Charles Schramm reported in detail a case in which septic fever followed operation for the removal of adenoids after an interval of several days. The patient, a child of six years, had been in very good health, having up to the present escaped diphtheria and the other ordinary infectious diseases of childhood and even the minor ailments of the earlier years. She had not been under medical observation for four or five months, when her mother brought her to the doctor for obstructive respiratory symptoms which had gradually developed during the five or six weeks immediately preceding. The child had become a mouth-breather during this interval and had also developed slight deafness, besides suffering from a constant nasal discharge. The vault of the pharynx was found filled with a succulent mass of tissue almost entirely obstructing the posterior nares. The tonsils were not enlarged, nor were the cervical lymph-nodes affected. A persistent dermatitis of the upper lip was sufficient evidence of the irritant character of the nasal discharge which had existed for several weeks. There was slight cough, but only scanty expectoration. The appetite was not impaired and there was some dyspnea on exertion. This probably made the child disinclined to exert herself at play or otherwise. The eyes were watery. The chest expansion was good and the lungs gave no evidence of inflammatory irritation. The heart action was good and its sounds normal, the urine negative. The patient was removed to a private hospital for operation in the morning and was operated on the afternoon of the same day, after due preparation as to diet. The day after the operation she was removed to her home. The anesthetic used was chloroform, and every precaution to secure asepsis to instruments and surroundings was taken. The growth was easily removed in three pieces, the first as large as a hazelnut the others about one-fourth the size. The bleeding was not excessive; in fact, rather less than usual. The child's head was frequently turned over the edge of the table to give free exit to blood and secretion. Besides, she was not deeply anesthetized and voluntarily hawked and spit out some of the blood and mucus. The tissue removed was mushy, the child was seen at her home on the afternoon of the next day. She was up and about, feeling as well and active as usual. The symptoms of respiratory and tubal obstruction were entirely relieved. The child was seen again four days later in the afternoon. She had been listless all day and complained of chilliness and headache. She preferred to lie in bed. She had no appetite, though to careful examination the throat and lungs were negative. The tongue was coated, the eyes slightly yellow, the abdomen distended but not tender, the temperature was 102.5° F., the respiration 30, the pulse 124. The next morning she seemed much improved, the temperature had fallen to 99° F. and the pulse to 100, the throat was negative. In fact, the whole trouble was considered intestinal, yielding to divided doses of calomel. In the evening, however, she was much worse, with a temperature of 104° F., pulse 140, respiration 38. She complained of pain in the left ear.

Progress of the Infectious Process.—On the next day she had a mild conjunctivitis with moderate purulent secretion. The pain in the ear having increased and hearing being almost nil, the membrana tympani was incised. A few drops of bloody pus escaped. The discharge never was abundant and soon became serous. Two days later the left membrane had to be incised with similar results. Throughout the disease there was

nothing abnormal to be seen in the throat. Three days after the onset the patient developed a persistent hacking cough which in two days became loose when coarse moist rales were to be heard all over both lungs, especially at the bases. No consolidation was demonstrable at any time. There was profuse perspiration at night. The nose began to discharge on the fifth day, the secretion being light-colored. The abdomen continued distended and the bowels sluggish. On the seventh day after their inception the symptoms, subjective and physical, began to subside. Normal sleep returned and with it the appetite. The congestion of the conjunctiva and the secretion from them disappeared. The nasal discharge ceased and hearing gradually returned. The cough continued for two weeks longer. The temperature, pulse and respiration were normal on the ninth day.

Adenoid Growths and Tendencies to Infection.—The condition previous to operation was apparently one of acute adenoiditis, a process of rapid proliferation of the lymphatic tissue, which in part constitutes the pharyngeal tonsil. This could have resulted apparently only from an acute infection. In this connection the opinion of W. N. Nikitin, writing in the *St. Petersburg Wochenschrift,* is interesting. The pharyngeal tonsil, instead of being possessed of phagocytic or protective powers, is especially liable to infection to a greater degree than other parts of the mucous membrane. The infective influence may extend to the lower respiratory organs. Not only is the enlarged tonsil a culture field, but, according to Dr. Wex, in the *Archives of Otology,* there may be a possible secretion of a toxic substance by the adenoid growth itself. If this case was one of sepsis resulting from infection of a denuded surface, an interval of three days for its development, *i.e.,* the period of incubation, would not be inconsistent with the diagnosis. The alternative of a grip infection, the disease being prevalent at the time, is rather invalidated by the course of the temperature which is characteristic of the former. However, acute otitis media might cause similar temperature changes, even if dependent on grip infection, hence there is room for doubt of this diagnosis. Two consulting physicians who examined the child's chest could find no evidence of pneumonia, nor was the temperature-pulse ratio indicative of it. It is remarkable that the medical literature of the past few years contains no similar case. The only allusion to a systemic infection following operation for the removal of adenoids appeared in a quotation from the *Journal of Laryngology* for October, 1901, where Wyatt Wingrave described a rash after adenoidectomy, which appeared on the second or third day. It was papular with an areola or erythematous in character; attacks the neck, chest and abdomen. It lasted two or three days. There was no desquamation and only slight constitutional disturbance.

Molecular Osmotic Tension of Fluids in the Body.—This, the regular scientific paper of the evening, was read by Dr. Edward K. Dunham. He explained the significance of differences in molecular tension and their methods of measurement. Direct observation of osmotic pressure is possible, but would require very delicate apparatus. There are two similar methods of measuring osmotic pressure: one is by finding the lowering of the freezing point of a solution, the other by observing the rise of the boiling point when substances are in solution in liquid that are submitted to either of these physical processes. It has been found that when one gram molecule is dissolved in a liter of water, the freezing point of the solution is lowered by 1.85 degrees on a centigrade thermometer. It is not difficult to obtain an instrument that will measure such slight and delicate variations of temperature very exactly. Dr. Dunham exhibited one which was marked in hundredths of a degree and which could be read to even smaller divisions than this, if necessary. Such a thermometer is made with a zero that changes from day to day according to temperature, but the zero point of which may be regulated by an actual observation in freezing pure water which gives the zero point for each daily set of observation.

Latent Heat.—A rather pretty demonstration of the existence of latent heat is made when water is frozen for these experiments in order to determine the freezing point of a solution. At first when the liquid to be observed is plunged into the freezing mixture the thermometer falls below the zero point. Then, as the water freezes, its latent heat is given out and the mercury rises rapidly to a point where it stays until all the liquid becomes ice, or until whatever ice has been in the liquid has entirely melted. This point represents the freezing point of the solution in question. The conductivity of liquids bears a definite relation to the molecular concentration of substances in solution, but there are certain exceptions that must be noted: For instance, if common salt be dissolved in water, a certain number of the atoms of hydrogen and chlorine are set free as ions, that is, atoms bearing a definite charge of electricity and the sodium and chlorine do not exist as free sodium and free chlorine which must be in a molecular condition but are in the ionic state. As a consequence of the presence of these ions the conductivity of the liquid is greatly increased. The measure of the electrical conductivity then becomes the measure of the electrical dissociation and is proportionate to the number of ions present.

Application to Formation of Lymph.—Certain of these principles can be applied to the investigation of the formation of lymph. Lymph formation is due to a number of factors. The most important are capillary pressure, tissue conditions, the permeability of the capillary wall, the osmotic pressure of the plasma, the osmotic pressure of the lymph, the osmotic pressure within the cells, and, finally, the permeability of cells. There are three processes in all transudation through animal membranes. The first consists of the mechanical squeezing through the membrane of fluid; the second is the passing of water through an animal membrane by osmosis; the third is the diffusion of substances in solution through a capillary wall. The albumin in a transudate finds its way through by a process of filtration. The study of transudates by cryoscopy gives a new set of data for the clinical recognition and differentiation of these more or less inflammatory fluids and some hint as to diagnosis and prognosis as a consequence. Ordinary blood depresses the freezing point by about .56 of a degree. Defibrinated blood is practically the same. Transudates vary between .52 and .64 in their effect upon the lowering of the freezing point. When transudates are studied with reference to these figures they are found usually to correspond to the averages given. But unexpected variations are found.

Anomalous Case.—In a patient seen at Bellevue, about a year ago, a special condition of the pleuritic fluid effused after an attack of pneumonia was found to exist. The patient was a scene shifter who had for a number of months been traveling through the country with a troupe in the performance of his regular duties. These usually consisted of a severe amount of active labor, requiring intense effort for a few minutes, after which the patient was likely to sit in a draft for a considerable period. He suffered from a pain in his chest for several months and then came down with a chill. Frank lobar pneumonia developed, but with some

pleurisy and effusion. The fluid removed depressed the freezing point by 1.40 degrees. This was the average of a large number of observations. Besides the electrical conductivity of the solution was lower than usual though the specific gravity was about that which obtains in pleural exudates. The pleural fluid was treated by ether, acetic ether and chloroform, but no special extractives were obtained. There was a slight trace of lactic acid in the fluid. The patient's blood was obtained and presented no special depression of the normal freezing point. This case seems to illustrate what may prove a very practical application of cryoscopic methods to clinical medicine. They will refer rather to prognosis than to diagnosis. It is evident that such a fluid could not be reabsorbed, since its molecular concentration is higher than that of the blood. The change, if any, would rather be in the opposite direction, since the influence of osmosis would make for this. It seems probable, however, that no interchange has taken place for a considerable period nor would it. The pain in the side, prolonged over many months, was a protracted attack of pleurisy which had brought on great thickening of the pleura. This was no longer a permeable membrane and hence no water passed from the blood into the pleural sac, after the exudate had once been formed. The excessive molecules present were not salts, hence it seems not unlikely that they were cleavage products of the large proteid molecules which had split into simpler molecules during their stay in the pleural cavity. Horse serum, subjected to the same conditions as that of the pleuritic fluid, by enclosure in a closed tube in an incubator kept at human temperature underwent no change. Bacteria introduced into the serum did not produce any change either. It seemed not improbable that the change noted was due to ferments from the tissues, especially such enzymes as occur on leucocytes. When some pleural fluid was obtained containing a large proportion of pus and leucocytes and some of this fluid was, under aseptic precautions, sealed in a tube, a change corresponding to the molecular concentration of the pleuritic fluid in the patient first mentioned was obtained. There was no apparent putrefaction, however, for the liquid had not changed in electrical conductivity. All putrefactive changes would give rise to ammonia, and the ammonia salts would lead to dissociation with the presence of free ions and consequent increase of electrical conductivity.

Chances of Absorption.—Where such high molecular concentration is found in a fluid there can be no hope of its reabsorption, and measures for its removal should be taken unless, indeed, by the injection of artificial serum the molecular concentration could be made more nearly similar to that of the blood, with consequent chance of natural absorption. This might produce an osmotic current toward the blood with relief of the condition.

Ionization.—Dr. Reynold Wilcox, in discussing Dr. Dunham's paper, said that these studies of molecular concentration and electrical conductivity with the relation to the presence of free ions in solution may open up a new chapter in the study of applied therapeutics, especially as regards the rational employment of drugs. There has been for some time a growing hope that the ionic theory may serve as a new basis for pharmacology. As is well understood, little is known about the real action of drugs in the human body and the fact that even ordinary sulphuric acid may exist in solution in two different forms gives some idea of the complexity of the problems presented. Alcohol is now recognized to be antidote of carbolic acid, but this is not so much because it dilutes carbolic acid, nor even because it is an alcohol and thus a congener of phenol or carbolic acid, but apparently because it prevents the ionization of carbolic acid in the presence of human tissues. Olive oil seems to act in something of the same way and it has been recognized that solutions of phenol in olive oil do not dissociate and hence are not likely to be effective as antiseptics. It has been known for some time that the degree of ionization of a substance in solution varies with the dilution and the temperature. It has been hard to find the exact influence of such factors. The use of electrical conductivity as a measure of ionization, however, may prove a very practical method of determining factors that were nitherto only to be found by delicate methods. Cryoscopy has proved a disappointment in furnishing any special information with regard to the urine, but it seems not unlikely that it will prove of decided advantage in the more complex problems of physiological chemistry in normal conditions within the body.

Cryoscopy of Exudations.—Dr. John H. Huddleston said that Dr. Dunham's novel deductions with regard to exudates and transudates after examination by cryoscopic methods seem to furnish a new field for the application of cryoscopy. He has been rather disappointed in the use of cryoscopy for urinary investigation, but these suggestions open up a new and important outlook and seem to add a definite prognostic feature to the diagnostic promise, while it is also shown that there are even some suggestions as to treatment that may be derived from cryoscopic investigation of pleuritic and other exudates. These will undoubtedly prove welcome additions to the armamentarium of the clinician and especially of the laboratory specialist.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, held Thursday evening, March 17, 1904.

The President, Dr. Andrew H. Smith, in the Chair.

THE scientific business of the evening consisted of a symposium on headache and its relation to eye-strain. These papers will all appear in full in the MEDICAL NEWS.

Mental Disturbances and Eye-strain.—Dr. Charles L. Dana said that the eye is the only organ of special sense that is usually supposed to cause by reflex action various disturbances of the nervous system. No one has ever heard of ear strain or tongue strain. Eye-strain may be divided into two classes: subcortical eye-strain, that is reflex effects produced because of failure of the accommodative nervous mechanism to act properly, and cortical eye-strain due to the conscious effort to overcome ocular defects of various kinds. It is this latter that is supposed to be the basis of most of the functional nervous disturbances. It is well to realize that this is really a brain strain instead of an eye-strain. In Dr. Dana's opinion no true mental disease is ever due to reflex from the eye or is ever cured by correction of optical defects.

Exhaustion Psychoses.—Dr. Dana has seen certain cases of psychic depression associated with eye-strain in two classes of people. In the first the patient is usually a young adult who has been studying very hard. As the result of improper refraction and the conscious effort to overcome it after a time the student becomes unable to read or to study and a state of mental depression supervenes. A very curious phenomenon in these cases is that after a time the patient also does not care for outdoor sport, though he may previously have been much interested in it. Rest alone fails to cure the condition. After refractive errors are corrected, however, the patient's improvement is marked. The other class of patients is usually represented by men in their for-

ties suffering from the beginning presbyopia of advancing years. In these cases as the result of reflexes from the eyes mental depression to the extent almost of melancholia, with great irritability is known not infrequently to develop. The symptoms are relieved almost at once by the wearing of proper glasses and no other form of treatment is of avail. Not infrequently there is no symptom that points very distinctly to the eyes in these cases, and unless the physician is on the lookout for them the true cause of the mental depression may escape his notice.

Minor Psychoses and Eye-strain.—While it is often claimed that minor psychic disturbances are due to reflexes from the eye, Dr. Dana has not found this to be the case in practice. When the patient has a good mind to begin with, this is not overthrown by defects of vision. The only serious effects are produced on the minds of those who are already suffering from mental disturbances of low grade, due to heredity, or other causes. As a matter of fact, the only real mental affection connected with eye-strain, in Dr. Dana's opinion, is the symptom-complex with grandiose ideas on the part of ophthalmologists, who think that spectacles are so important and who are able to trace all the failures of genius and their ailments to the absence of spectacles.

Headache and Eye-strain.—Dr. C. W. Cutler discussed the relation of headache, migraine and other sensory disturbances to eye-strain. He does not consider that migraine should be considered merely as a sick headache, nor has he found that true forms of migraine are ever cured by the correction of refractive errors. Migraine occurs in unstable nervous organisms, that are readily influenced by peripheral irritation of any kind. Heredity is a prominent feature and the periodicity shows the serious affection of the nervous system which underlies it. Where migraine is an equivalent of epilepsy eye treatment is of no avail. On the other hand, where migraine is due to peripheral irritation alone, then the correction of refractive errors as one of the sources of peripheral irritation may bring about relief. While heredity is a prominent element in migraine, it must not be forgotten that the heredity of eye defects is very common. Another important point is that not infrequently the general health needs improvement after refractive errors have been corrected, or the patient's symptoms will not be relieved.

Motor Disturbances and Eye Disease.—Dr. B. Sachs discussed the relation of epilepsy, chorea and the convulsive tics to eye affections. He said that the dependence of the motor neuroses so-called on eye-strain had been greatly exaggerated. As the true nature of these neuroses comes to be better understood, fewer cures are reported. With regard to epilepsy, it is only in American literature as a rule that supposed cures of this serious nervous disease are reported by the oculist. Neurologists have not reported such cases, and in the recent large monographs published in Europe, on epilepsy, very little attention is paid the question of eye-strain. The investigating committee of the Neurological Society of New York some years ago investigated the question of the cures of epilepsy by the correction of eye defects and after carefully following fourteen cases, found that not one of them had been improved and that the evidence in other reported cases was untrustworthy. The reports of such cures can only be looked upon as morbid literary products.

Craig Colony Experience.—Recently a committee investigated the condition of the eyes of epileptics at Craig Colony. A much larger proportion than is usual among people of their years were found to be suffering from various eye defects. The refractive errors were therefore carefully corrected and disturbances of muscle balance adjusted. After a full year's experience of the patients under the altered circumstances the report of the condition of these patients, 68 in all, shows that one of them has been improved somewhat, but that all of the others have remained in the same condition as they were before. Almost any procedure with therapeutic suggestiveness in it would have given better results than tris, though much was hoped for it and much more written about the causative effect of such eye disturbances in the production of epilepsy.

Chorea and Eye-strain.—Dr. Sachs has never seen a case of true chorea benefited by a correction of refractive errors. Habit chorea, which often resembles true chorea, may begin in efforts to make up for refractive errors and this may be completely cured by the adjustment of proper spectacles. While habit chorea is usually of the face, it may affect other parts of the body and especially the shoulders and arms, and even these manifestations may be cured by the wearing of spectacles. In epilepsy it is as common to see patients wearing glasses as to find on them the evidence of a bromide rash. When other procedures than the fitting of glasses is attempted, even to operations, the ophthalmologist's work seems unjustified. Dr. Sachs has seen a teacher who suffered from occasional nocturnal epilepsy treated by tenotomy and thus made to suffer from double vision which was very annoying to him, though his nocturnal epilepsy had proved a source of very little inconvenience, beyond apprehension.

Hysteria and the Eye.—Dr. Ward A. Holden discussed the relation of the eye to hysteria, neurasthenia and the traumatic neuroses. The most constant symptom of hysteria is the concentric contraction of the visual fields. There are, however, various anomalous symptoms, occasionally double vision to a certain degree; or, on the other hand, hemianopsia are not unusual. In one case the candle flame was seen single in all directions up to fifteen feet, but double after that. After the concentric contraction of the visual fields the spiral field is the most usual; that is, the patient when examined shows at first a contraction of the fields and this grows smaller and smaller as the examination continues. Anomalous fields sometimes occur. The anesthesia of the retina corresponds in certain ways to other anesthetic stigmata of hysteria and traumatic neuroses and there may be hyperesthesia with supersensitiveness to light or with the occurrence of peculiar figures in light before the eye that also correspond to other hysterical conditions.

Functional Neuroses and the Eye.—Dr. G. E. de Schweinitz, of Philadelphia, opened the discussion by saying that eye-strain is not necessarily brain-strain in a person of lowered mental equilibration, but brain-strain may be due to eye-strain, even where there is no lowered constitutional condition. Practically every ophthalmologist must have seen, and not infrequently, the condition of depression, sometimes going on to melancholia, which develops in adults past middle life as presbyopia becomes a marked feature of their vision. In early life the backwardness of children must often be attributed to visual defects that need correction. Dr. de Schweinitz considers it very important to remember that it is not the marked errors of refraction which cause mental and nervous phenomena, but, on the contrary, trifling errors are more serious in their effects. The constant effort to overcome these wears out the nervous mechanism. Where the error is large, after a time nature refuses even to try to compensate for it, and so nervous and mental disturbances do not occur.

Migraine and Chorea.—Dr. de Schweinitz has never seen a cure of true migraine by the correction of refractive or other optical errors, but he has seen de-

cided improvement. Migraine can be improved by the removal of any peripheral irritations, and such as originate in the eye are especially important. He has never seen the cure of Sydenham's chorea. But this, like other motor neuroses, demands the correction of every possible source of irritation that may be producing evil effects on an erethistic nervous system. Undoubtedly chorea is due to injudicious schooling in many cases. An analysis of 275 cases of the affection shows that children suffering from it are in 75 per cent. of the cases sufferers also from hypermetropia. This points to the necessity for careful eye examination and treatment. At times physicians will be startled by the improvement that follows proper treatment of the eye. Habit chorea very often is entirely relieved by proper refraction. There is no doubt then that the cure of eye-strain makes distinctly for the happiness of mankind and, while there has been much exaggeration with regard to it, the effort must be to correct the exaggeration and not to limit the application of the important therapeutic principles that underlie it.

Hysterical Amaurosis.—This, in Dr. de Schweinitz's opinion, is one of the most interesting subjects for investigation still left for the ophthalmologist. Bilateral amaurosis is impossible to estimate. There are some fifty cases in the literature. As a rule it comes on suddenly and disappears during the course of the next few hours, or days. One well authenticated case, however, lasted for ten years. Periodic amaurosis also occurs and adds to the mystery of this affection. With regard to hysteria, a most characteristic symptom is the contraction of the visual fields of the still more characteristic symptom of tubular fields, which has been recently insisted on in Germany. In this, whether the field be taken at a distance of one meter, two meters or three meters, the diameter of the field is always the same. There seems to be in most of the cases of hysterical blindness a definite succession of events consisting of amaurosis first, then hemianopsia and finally gradual cure, or there may be amaurosis, central scotoma, then hemianopsia and cure. An unusual width of the field is sometimes seen which corresponds to the hyperesthesia so often noted in other sense organs and especially in the touch nerve endings.

Hysteria and Organic Disease.—Not infrequently hysterical symptoms are noted in connection with organic disease of the nervous system. In these cases hysterical symptoms may also be seen in the eye. The toxemias, as for instance that due to intoxication with carbon sulphide are particularly noteworthy in this regard. Sometimes the symptoms are so anomalous as apparently to point to disseminated sclerosis. Even brain-tumor may sometimes give manifestations which apparently point to hysteria and the possibility of an associated hysteria whenever there is any injury or pathological condition of the nervous centers must not be forgotten.

Headache and the Eyes.—Dr. John E. Weeks, continuing the discussion, said that many headaches are relieved by proper treatment of the eyes, but he had never seen migraine relieved. He had never seen chorea or epilepsy under any circumstances cured by refractive improvement. Habit chorea, especially with unilateral facial spasm, orbicularis spasm, or both, promptly yields to eye-treatment. It must not be forgotten, however, that certain headaches accompanied by tendencies to vertigo that simulate migraine may, just as the habit choreas, be cured by the correction of refractive and other optical errors. The improvement in these cases is so striking and so immediate as often to be a great cause of surprise and easily to lead people into the idea that some serious constitutional condition has been cured.

Retardation of Development.—Dr. Joseph Collins said that there is no doubt now that the failure to correct optical defects during early years may hamper education and retard development. This is one of the great benefits that the correction of eye-strain has brought with it. On the other hand, the exaggerated claims with regard to epilepsy, migraine and chorea are without foundation. One patient improved at the Craig Colony out of 67 shows how little may be accomplished by the correction of refractive errors, for if all 67 of these patients had been hit over the head with a club and told that it would probably do their epilepsy good more than this number would have been improved by that confessedly crude bit of suggestive therapeutics. As regards chorea, Dr. Collins considers that it is an acute infection and therefore there can be no possible hope of improving it by means of eye-treatment. Of 100 cases of true migraine investigated and treated from the eye standpoint, none were improved. On the other hand, very many cases of pseudomigraine have been improved.

Not Necessary to See Patients.—Dr. W. B. Marple said that the neurologists seem to have forgotten how much progress has come in recent years in the practice of ophthalmology. To listen to the neurological criticisms of the failure of the correction of eye-strain to relieve various serious nervous conditions no one would think that they had realized recent ophthalmological progress. It seems that it is no longer necessary even to see patients to diagnose the existence of eye-strain. One distinguished ophthalmologist has shown that all of the prominent writers of England and America who suffered from chronic symptoms of any kind were really the victims of eye-strain diagnosed *in absentia*.

Multiplicity of Prescriptions.—Dr. Marple said that one of the most unfortunate features of present-day prescribing of glasses for refractive errors is the number of times that some eye specialists consider it advisable to change their prescriptions. If, after refraction, the patient comes back ten days to two weeks later, with a report that he is not feeling better, the glasses are changed. This happens again and again, so that by the time patients have become convinced of the advisability of consulting some other ophthalmologist it is not an unusual thing to have them present half a dozen pairs of glasses that have been prescribed for them in scarcely more than as many weeks. It is evident that there is no need for this changeableness and ophthalmologists are evidently trying to remove symptoms by means of spectacles that must be treated in other ways. There are certain nervous symptoms sometimes attributed to eye-strain which are not only not caused by refractive or other optical errors, but are not even contributed to by eye conditions at all.

Overtaxing the Eye.—Dr. Herman Knapp said that overtaxing the eye, especially when it is not in normally healthy condition, may easily produce reflex symptoms outside the eye, or pathological lesions within the eye. Headache from eyestrain is in this way not an unusual phenomenon and even hemorrhage into the retina may be due to overuse of the organ when the blood vessels are in weakened condition. Dr. Knapp recalled a very instructive case which he saw about thirty years ago. The patient admitted that he had been overreading until finally partial loss of vision had occurred. The pathological condition present was hemorrhage into the retina. Careful inquiry into the patient's immediately previous history showed that he had stayed up most of the night before, as well as on several preceding nights, reading all about what he now called that "damn Beecher trial." Straining of the eyes will thus bring out the defects that might otherwise remain latent for a long period.

Asthenopia.—This may be, in Dr. Knapp's experience, of two kinds, simple or complicated. Simple asthenopia does not produce mental or nervous symptoms. The individuals simply get tired and then are no longer capable of using their eyes. This is due to a congenitally weak visual apparatus, which exists in about one-third of all persons seen. If asthenopia of low grade occurs in people of nervous organizations then their nervousness tempts them to use their eyes beyond the period of physiological fatigue and the consequence is headache and other reflexes.

Centers of Conception and Perception.—Dr. Knapp considers that with regard to the eyes and consequent backwardness in intellectual development the existence of separate centers for conception and perception should be remembered. Minds may be perfectly capable of translating perceptions into ideas and not conceive ideas in such a way as to connect them with others. A boy may not be able to get through the alphabet, yet may have quite a talent for mathematics. The memory center may be deficient and while in these cases of nervous defects in the brain there may also be defects in the ocular mechanism, the two conditions are by no means necessarily connected as cause and effect.

Dr. Gruening said that no ophthalmologist of any serious experience pretends to cure epilepsy or chorea, or any of the real nervous affection. The neurologists then in taking great pains to refute the possibility of such cures are really not attacking a favorite position of the ophthalmologist, but rather the corpse of certain ideas and hopes that overenthusiastic ophthalmology encouraged under mistaken impressions for a while, years ago. The whole of the evening's discussion then, in Dr. Gruening's mind, had been too much occupied with dead issues. There is no use in trying to compel those who deliberately exaggerate the supposed effects of ophthalmological treatment to adopt a more conservative position, since they are not willing to do so of themselves.

Hysterical Amaurosis.—The President, Dr. Andrew H. Smith, said that in certain cases of hysterical blindness there can be no question of malingering. In a case seen not long since the patient became suddenly blind after having had a quarrel with her husband. There was no question of feigning in the case, because she was the worst scared woman Dr. Smith had ever seen. She presented certain other stigmata of hysteria, which seemed to make it clear what the true condition was and a favorable prognosis was given. Total blindness lasted for 36 hours after which there was a gradual regaining of sight.

Migraine and Muscle Balance.—Dr. Smith said that in one case he had been taught the lesson of a possible connection and of the possibilities of therapeutic effects in muscular eye deficiencies and their correction. The patient suffered every three or four weeks from intense headache. Practically everything was tried without avail and recourse had to be had to morphine for relief from the pain. Gradually the dose of morphine had to be increased until it became evident that the patient, a comparatively young woman, was contracting the morphine habit. She suffered from a slight amount of internal strabismus. Dr. Smith had insisted on a number of occasions that she should have her eyes treated. She constantly refused. She could not be persuaded to go to an ophthalmologist. Finally, one day when Dr. Smith was called to see her because of the beginning of her usual attack of migraine, he brought an ophthalmologist with him and insisted that the operation be done at once. After some demurrer this was permitted. The strabismus was corrected. Since then there has not been a single attack of migraine nor any symptom of it. Before the operation for strabismus, practically all the classical symptoms of true migraine were present. While then in most cases migraine is not relieved by operative procedures on the eye, it is evident that in some cases unexpected relief may follow from operations that would ordinarily not be deemed curative. Ophthalmologists must, therefore, always be called in consultation in such cases and whatever ocular defects exist must be corrected. At times the consultation will be rewarded by a cure as unexpected as it is welcome to the physician and grateful to the patient.

CHICAGO SURGICAL SOCIETY.

April Meeting.

Metapneumonic Empyema.—Dr. Arthur Dean Bevan, at the April meeting of this Society, showed a young man who gave a history of pneumonia, and a metapneumonic empyema. A rib had been resected, and an empyema of the left side drained eight months before by another surgeon, after which the opening closed. This was followed by a reaccumulation of the fluid, and when he saw the patient the entire left side of the chest was full of pus up to the clavicle, and the apex beat was in the middle line. He took an X-ray view of the case, which showed fairly well the condition. There was a small discharging fistula in the third intercostal space, two inches to the left of the sternum, and through this a probe could outline the entire cavity. The patient was septic, and in bad condition. A Schede operation was done. An extensive U-shaped incision was made, and the soft tissues lifted up. A resection was made from the third rib to the tenth inclusive. This was done subperiosteally. After lifting up a very large flap, and after the resection had been made, he took a powerful pair of scissors and cut away all of the intercostal tissues, including the pleura, which was three-quarters of an inch in thickness. This U-shaped flap was drawn down and a tube as large as the thumb introduced to the apex of the cavity, and the flap stitched in position. Some gauze was also packed in. The operation was done January 7. The patient had some sepsis for about ten days after the operation—in other words, the temperature continued. However, his condition gradually improved, and within about four weeks after the operation, he outlined the size of the cavity which remained, and it was done in this way: He injected iodoform emulsion into the cavity, sealed the opening, and took an X-ray picture. The skiagraph showed a cavity which reached almost to the clavicle, it being a fine, ribbon-like cavity. After he had outlined this cavity with the iodoform emulsion, he put the patient at work blowing up an air-bag. This was responsible for the complete cure which had taken place, and the obliteration of this long, ribbon-like cavity that extended to the apex. This was the seventh or eighth Schede operation he had done, and it was the most satisfactory one of the entire group.

Appendicitis with Perforation of the Duodenum.—Dr. D. W. Graham reported this case, in a patient, aged thirty-seven years, and after detailing the steps of the operation that had been performed, as well as mentioning the death of the patient on the tenth day following operation, at the autopsy the appendix measured 11 cm. in length and was found to pass directly upward behind the ascending colon, its free end being adherent to the psoas muscle and lying behind the curve of the duodenum and attached to it. Six centimeters from the pylorus and on a level with

and 3 cm. to the right of the biliary papilla was a perforation of the posterior duodenal wall 3 mm. in diameter. He presented a specimen showing the relation of the appendix to the colon, the abscess cavity and the duodenum.

Amebic Abscess of the Liver, with Complication.—Dr. Graham also reported this case, and exhibited specimen. The patient was a man, thirty-seven years of age. The specimen showed (1) the large sloughing wound of the abdominal wall which had been preserved intact; (2) the adhesion of the liver to the colon, which represented the point where the abscess was partially evacuated through the colon wall before the operation; (3) the abscess cavity in the liver as large as a fist, notwithstanding the contraction that had taken place; (4) many small abscesses through the liver; (5) numerous ulcers in the mucosa of the colon, with sloughing undermined edges and intercommunicating by chanels underneath the mucosa, having all the characteristic features of amebic ulceration.

X-ray of Cervical Rib.—Dr. D. N. Eisendrath showed a skiagraph from a patient, fifty-six years of age, who consulted him on acount of recurrent hemorrhages apparently from the lungs. The skiagraph showed beautifully the cervical rib. As regards the origin of this cervical rib, the only way one could understand them was to consider them as a reversion of type of the mammalia toward some of the elementary forms. This cervical rib existed in reptiles. It must be regarded as an abnormal development of the anterior nucleus of the transverse process of the seventh cervical vertebra.

Adenoma of the Mucous Glands of the Lips as a Cause of Macrocheilia.—Dr. D. N. Eisendrath reported this case. He said that this condition consisted in an enormous thickening of either the upper or lower lip, or both, and occurred especially in scrofulous children, was very apt to relapse, and often very chronic in character. Microscopically, it consisted of an hypertrophy of the mucous glands, with an increase of all of the tissues constituting the lip, the connective tissue, blood vessels, etc. It also occurred at times in syphilis. Operation was successful, with no recurrence of the disease since its performance.

Empyema.—Dr. A. E. Halstead reported the case of a child, eight years of age, who had an extensive empyema of two years' duration. He resorted to extensive resection of the ribs, except the second one. He found difficulty in getting the cavity closed under the scapula. There was a high cavity which extended away up to the second rib, and so far as he knew, as he had not seen the child for a month, this cavity was still open.

Results in Abdominal Wall Suture.—Dr. Charles Davison read a paper on this subject. Some time ago he proposed the fastening of a longitudinal silkworm-gut suture in the fascia of the abdominal wall by terminal bowknots, leaving the ends of the suture protruding from the wound; the knots to be untied by traction on the exposed ends and the suture removed at the completion of the process of healing. A complete series of 41 consecutive cases with sterile primary union was reported at that time. The aim of this simple manipulation was to obtain all of the advantages and security of close and accurate suture of the individual layers of the abdominal wall, without the danger of suppuration incident to the use of catgut, and its pulpification and absorption, and without the dangers of irritation and sinus following the use of any permanent buried suture. The writer had used the tied longitudinal silkworm-gut suture in all clean laparotomies during the three years, 1901-2-3, with the following results: 178 cases with 7 infections or less than 4 per cent. of infections. Of these cases, 23 were emergencies, operated upon without previous preparation, with 4 cases showing infection, all limited to the subcutaneous fat. The remaining 150 cases had hospital preparation previous to the operation, with 3 cases of infection, or less than two per cent. of suppuration in the prepared cases. Of the writer's 178 cases of removable silkworm-gut suture, 131 had been followed up to the time of the preparation of this report. One case of spontaneous epigastric hernia operated upon by Mayo's method had a recurrence of hernia two inches from the old line of incision five months after operation; three-fourths of one per cent. of postoperative ventral hernias.

Dr. A. J. Ochsner said there were three elements which must be considered in the closure of abdominal wounds. First, accurate coaptation; second, an aseptic wound, and third, the absence of pressure necrosis. If these three conditions were carried out, it did not make much difference what suture material was used, or what particular method one employed, he would not get postoperative hernia. Last year he had approximately 740 abdominal sections, and of this number he did not think there would be a ventral hernia in which the three principles referred to were carried out.

Dr. D. N. Eisendrath had seen the method of Dr. Davison used very satisfactorily.

Dr. Wm. M. Harsha said he had used Dr. Davison's suture method in probably twenty or more cases. There had been no hernia in any of the cases he had been able to follow up; but the skin cicatrix had spread in some cases. He had had no case of infection. By this method it made the neatest and nicest scar when one removed the sutures.

Dr. C. C. Rogers had used the Davison suture in 18 cases, 5 of them being emergency cases, the others hospital cases, with one case of infection. In 13 there had been no hernia; the others he had not seen or heard of recently.

Dr. Carl Wagner had used the longitudinal wire suture in several cases, but had abandoned it on account of the wound in two cases having opened. He thought the wire was too stiff. Silkworm gut was preferable, for the reason that it was much smoother and more elastic.

Dr. E. Wyllis Andrews said that one virtue of the longitudinal silkworm-gut stitch lay in the fact that it was semi-rigid and semi-flexible, becoming molded to the tissues and not stretching.

BOOK REVIEWS.

TRANSACTIONS OF THE AMERICAN CLIMATOLOGICAL ASSOCIATION FOR THE YEAR 1903, Volume 19. Printed for the Association, Philadelphia.

THE present volume of transactions of the American Climatological Association contains some interesting data with regard to the influence of altitude upon heart disease, by R. H. Babcock, M.D., and some notes on the relation of neuralgia to altitude, by F. Savary Pearce, M.D. The subject of tuberculosis and its treatment by change of climate, with special reference to the open-air treatment, is discussed in a suggestive series of papers. An interesting article with regard to consumption is the susceptibility of the negro to tuberculosis, by Thomas D. Coleman, M.D., of Augusta, Georgia.

Another series of papers has for subjects complications of pneumonia, the treatment of pneumonia, thiocol in the treatment of pneumonia and the death-rate of acute pneumonia. On the whole the volume is of a practical character and all those who are interested, especially in respiratory diseases, will find much suggestive material in it.

Pediatrics (The Medical Epitome Series). A Manual for Students and Practitioners. By Henry Enos Tuley, A.B., M.D., Professor of Obstetrics in the Medical Department of Kentucky University. Lea Brothers & Co., Philadelphia and New York.

This series of medical epitomes deservedly enjoys a high reputation. The present volume contains an excellent summary of the most recent progress of our knowledge of children's diseases. It is small enough to be carried around in the pocket for purposes of consultation and yet complete enough to be helpful even to the experienced practitioners, and it contains a number of formulæ for infant feeding and data with regard to the development of children that cannot well be carried in the memory, yet must be at hand at certain times. While originally intended for students, the book would undoubtedly be of great service to practitioners whose duties give them much to do with ailing children.

System of Physiologic Therapeutics. Volume 7, Mechano-therapy and Physical Education, including Massage and Exercise, by John K. Mitchell, M.D., and Physiology of Manual Exercise, by Luther Halsey Gulick, M.D. P. Blakiston's Son & Co., Philadelphia.

This masterly series is now drawing to a close. Practically all the projected volumes have been published and we congratulate the editor, authors and publishers alike on giving the profession so valuable a series of manuals.

The present volume, we believe, should be available to every medical man. Too frequently are the procedures here outlined left to the osteopath and the "quack." It is a great privilege to have in a well-illustrated form a manual dealing so completely with the form of muscular exercise.

A very useful chapter on Corrective Manipulation and Orthopedic Surgery is given by Dr. James K. Young, and Dr. Walter Pyle adds a useful chapter on Physiological Methods in Ophthalmic Therapeutics.

The Therapeutics of Mineral Springs and Climates. By I. Burney Yeo, Professor of Practice of Medicine in King's College, London. W. T. Keener & Co., Chicago.

From the standpoint of the practioner of ample practice among a favored clientele the subject of health resorts is one of much importance. By reason of the lack of efficient presentation in numerous text-books, he makes it a point to spend his leisure in taking short trips to various health resorts and thus obtains a first-hand knowledge, which is of undoubted service to his patients.

Yeo has evidently done this and has further taken the pains to write it all out, as it were, putting down his impressions as he went along, and later revision and editing has given us this practical and very useful manual. It is thoroughly reliable and full and an exceedingly serviceable volume, particularly for European health resorts.

A Manual of Electro-Static Modes of Application, Therapeutics, Radiography and Radiotherapy. Second Edition. By William Benham Snow. A. L. Chatterton, New York.

This second edition is an amplification of the first. We can add that for the beginner the volume is an extremely useful one. The writer's optimism is in need of some measure of corrective, but we believe that thoroughgoing optimism in therapeutics, even if dangerously near the border of charlatanry, is necessary in many therapeutic procedures.

Immune Sera. Hemolysins, Cytotoxins and Precipitins. By Prof. A. Wassermann. Authorized translation by Boldnan. John Wiley & Sons, New York.

This is a fragment, but a very useful one, of lectures given by Wassermann on topics outlined by the title. There is little in the small volume of seventy-five pages not in more extended volumes, and it is assumed by the writer than much is known by the reader—but, on the whole, a serviceable fragment.

BOOKS RECEIVED.

The Medical News *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* Medical News *will shortly appear:*

Studies from the Rockefeller Institute for Medical Research. Volume I.

Notes on Malignant Growths in the Insane. By Dr. J. R. Knapp. Illustrated.

Modern Ophthalmology. By Dr. Jas. M. Ball. 8vo, 820 pages. Illustrated. F. A. Davis Co., Philadelphia.

The Personality of the Physician. By Dr. A. T. Schofield. 8vo, 317 pages. P. Blakiston's Son & Co., Philadelphia.

A Manual of Fever Nursing. By Dr. R. W. Wilcox. 12mo, 236 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

Organes Genito-Urinaires de l'Homme. By Dr. Henri Hartmann. Quarto, 432 pages. Illustrated. G. Steinheil, Paris.

Transactions of the Rocky Mountain Interstate Medical Association. 1903. 8vo. Illustrated. Salt Lake City, Utah.

Transactions of the American Pediatric Society, 1903. Edited by Dr. Walter Lester Carr. 8vo, 234 pages. Illustrated.

The Therapeutics of Mineral Springs and Climates. By Dr. J. B. Yeo. 8vo, 760 pages. W. T. Keener & Co., Chicago.

The Ophthalmic Year-Book, 1903. By Dr. Edward Jackson. 8vo, 260 pages. Illustrated. Herrick Book & Stationary Co., Denver.

First Report of the Tenement House Department of the City of New York, 1902-1903. Two volumes. 8vo. Illustrated. New York.

The Clinical Study of Blood Pressure. By Dr. T. C. Janeway. 8vo, 300 pages. Illustrated. D. Appleton & Co., New York and London.

Seventeenth Annual Report of the State Board of Health of Ohio, 1902. 8vo, 508 pages. Springfield Publishing Co., Springfield, Ohio.

Atlas und Grundriss der Lehre von den Augenoperationen. By Dr. O. Haab. 12mo, 303 pages. Illustrated. J. F. Lehmann, Munich.

The Meaning of a Modern Hospital. By Dr. W. Bruce Clarke. 8vo, 47 pages. Longmans, Green & Co., London, New York and Bombay.

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ORIGINAL ARTICLES.

EYE-STRAIN AND THE PSYCHOSES.[1][2]

BY CHARLES L. DANA, M.D.,
OF NEW YORK.

IN studying the influence of eye-strain upon the bodily functions, it is very necessary to know what is meant by this term. It is not found at all in works on psychiatry, and is not mentioned in all recent works on ophthalmology. It is, on the other hand, rather frequently found in medical journals and in semi-popular medical literature. The eye seems to be the only organ which is thus popularly associated with a strain; for we do not hear of ear-strain or tongue-strain, stomach-strain or kidney-strain. Nevertheless, "eye-strain" is a convenient word, and probably carries a fairly definite meaning to most minds.

As I understand the term, eye-strain consists of two kinds of straining. In one case it is the automatic effort of the midbrain and oculomotor nerves to adjust the eye in such a way as to overcome abnormalities in refraction, accommodation and imperfect muscular balance. This kind of straining is largely done unconsciously, just as a person with one leg shorter than another unconsciously adapts his posture and gait to the deformity. This is really an eye-strain proper; it does not involve attention or conscious mental effort, except casually. It is mostly subcortical and is a kind of spinal eye-strain.

The second kind of eye-strain occurs when the eye is more seriously defective, or the receiving apparatus of the brain is fatigued. Then the cortical centers are brought into play. The imperfect vision is appreciated with some sense of its defective working, and a distinct and fatiguing effort is made to supplement the ordinary mechanism of the eye, and a sense of this effort, to the point of distress, may result. This attempt may not be distinctly recognized as an effort for better vision, but only perhaps as something wrong, which requires adjustment. This is the kind of eye-strain ordinarily meant, I presume, when the term is popularly and correctly used. It will be seen that eye-strain of this second kind is really a brain-strain. And it seems to me that it is only this kind of strain which can do any widespread harm. As long as eye-defects are automatically regulated by the machinery of the oculomotor nerves and midbrain, there will be no serious consequences, any more than a person with a somewhat shortened leg will suffer much as long as the shortening is so slight that it calls for no voluntary effort to help each step along. At least, it is only when a patient's brain becomes seriously weakened or tired by some additional trouble that the ordinary limp may become a real discomfort.

The further inference is, in my opinion, that many, perhaps most, minor ocular defects *may* exist without doing any harm, the organ compensating perfectly, like a leaky heart. (Over 75 per cent. of school children have refractive errors.)

Since real eye-strain is a kind of attention or brain-strain, it is quite easy to understand that it can lead to disagreeable results along various lines.

My task is to inquire what influence this cerebral eye-strain plays in the psychoses, or morbid mental states.

There are two groups of psychoses: one includes the insanities, technically speaking, in which responsibility is lost or custodial care required.

The other includes the minor psychoses, which embrace those forms of morbid activity of the mind displayed in hysteria, the neurasthenic insanities, morbid fears, doubting manias, imperative impulses, and compulsive acts; also in dipsomania, sexual perversions, erratic types of character allied to paranoia, as well as various hypochondriacal and abortive melancholic states. These are often grouped as neurasthenia. But neurasthenia is a condition which, I think, is relatively rare, for most or many neurasthenias are only psychoses of a minor grade.

Now, with reference to the effect of eye-strain in producing the major psychoses. Alienists, I think, without exception, do not recognize eye-strain, even as a contributing cause. I cannot find any systematic writer who even refers to it. In the last edition of Kraepelin (1903), and in the monumental work of Ballet (1903), of 1,500 pages, no reference is made to the subject.

Some years ago, as Dr. Mabon, formerly superintendent of the St. Lawrence State Hospital, informs me, a serious attempt was made by a competent oculist to help or cure cases of insanity in the hospital under his care, by attention to the eyes. But the oculist failed. About six years ago Dr. Coikendyl made similar experiments at the Willard State Hospital, and claimed some successful results. I am not prepared to deny his success, but I know that the hospital physicians did not share his opinion as to the value of his work. Some years ago oculists were appointed to the State hospitals of New York, and have done good work in relieving obviously defective conditions, but not in curing insanity.

My own experience has made me watchful for

[1] Read before the New York Academy of Medicine March 17, 1904.
[2] Received for publication March 28, 1904.

eye-defects in psychoses and neuroses, for I was one of the committee appointed some sixteen years ago to investigate the importance of Dr. Stevens's views in regard to eye-strain in epilepsy and chorea. The results of my observations have been small. I have seen a few cases of eye-strain, however, with apparent bad results mentally, in students at the secondary schools, where the young men really work hard. In them it seemed as if the eye-strain really led to a kind of exhaustion psychosis. These boys did not get migraine, or headache especially, but there was actually brought on, by close application to books, a mental confusion and exhaustion, so that they simply could no longer read, or study, or remember. This condition was accompanied with some apathy and depression and lack of general interest, so that they no longer cared even for their outdoor sports and amusements. The eyes showed refractive errors and secondary muscular strain. Recovery came very quickly in most cases after rest and proper glasses. In one case only was the exhaustion so marked and prolonged that I feared the development of dementia præcox.

I must add that these cases are very rare in my experience; the eye-strain usually showing itself only in discomforting local conditions. Nevertheless, I believe it wise to have the eyes of psychopathic children, who do not study or who do study very hard, carefully examined.

Again, in men in the forties, who are applying themselves closely as teachers or at some clerical occupation involving fatigue to both mind and eye, presbyopia comes on insidiously, and sometimes a condition of mental depression and irritability amounting to a mild kind of melancholia may develop. Here, no doubt, the eye-strain plays a considerable part. But these cases, too, are rare.

With regard to eye-strain and the minor psychoses, I might say a good deal, but as what I call the minor or neuropsychosis is usually called "neurasthenia," I should be encroaching on the field of others.

I can only say that after sixteen years of watching, I have found hardly any cases in which eye-strain is an important and direct factor in establishing even a minor psychosis, though it modifies its symptoms and secondarily adds to the disturbance. For example, in the hysterical, paralysis of the ciliary muscles may cause microscopy, spasm may cause macroscopy and accommodative disturbances may cause polyopia.

Dr. Gould, in his biographical clinics, gives sixty-eight reasons why success is not always obtained in treating the eyes of these cases, and to this I can only say that success is generally obtained without treating the eyes. In fact, the visual function is largely automatic and spinal, and when the mind is a good mind, the visual machinery does not overthrow or directly and seriously affect it. When the mind is unstable, or the body weakened, cerebral eye-strain plays its part; and when the mind is unstable and the visual machinery is very poor, even spinal and midbrain eye-strain may do some harm.

This is all that my experience or study can add to this subject, and I am not sorry that, in fact, the results are so meager. Perhaps after all the most real psychosis connected with eye-strain is that shown by a group of enthusiastic oculists who have become obsessed with the idea that eye-strain forms the background of most pathological conditions, and, like Bishop Berkeley and his tar-water, think that the whole material universe is nothing and eye-strain is everything. With due respect also to my learned colleagues, I should suggest that "glassing" had become something of, at any rate, a minor psychosis. For if it is sometimes underdone, it is oftener enormously overdone, as witness the spectacular prosperity of our modern opticians. For my part, though, I heartily believe that eye-strain should be carefully looked after. I do not think that our mental balance and nervous well-being are so entirely at the mercy of slight defects in an organ that has been perfected by millenniums of use and misuse.

MIGRAINE AND SICK HEADACHE.[1][2]

BY COLMAN W. CUTLER, M.D.,
OF NEW YORK.

Migraine is clinically considered by most writers a paroxysmal neurosis, having as its chief symptoms headache and a variety of sensory manifestations, characterized also by heredity, periodicity, and commencement in early life. From another point of view migraine or sick headache[3] may be regarded as the manifestation of an unstable nervous organism, influenced in many cases by various peripheral excitations, and it may be assumed that these, or rather their anatomical bases, are frequently transmitted from one generation to another in members of the same family, and form the hereditary feature upon which stress has been laid as an essential characteristic of migraine. It is evident, also, that the periodic attack cannot characterize migraine, for periodicity does not exclude a constant cause. In Jacksonian epilepsy the cause is constant when it follows a fractured skull for instance, although the symptoms are in the highest degree periodic.

Much has been written, of late, on the subject and little has been added to our knowledge of the disease. The confusion that exists is increased by unwarranted dogmatism shown by writers who assume a certainty which the indefinite nature of the disease and the lack of all pathological data do not justify.

It is common to find sick headache in many members or even generations of a family handed down with fatalistic expectations of its inevitableness, as if it were a family skeleton or an ill-omened heirloom. These headaches are strikingly similar in detail, having as many points of resemblance as family features. For instance, it is common to hear that in a certain family the head-

1 Read before the New York Academy of Medicine March 17, 1904.

2 Received for publication April 9, 1904.

3 Gowers ("Diseases of the Nervous System," Vol. II, p. 853) says that sick headache is always migraine.

aches are preceded by visual aura of the same type, or that the headaches begin in the same part of the head, or that the gastric symptoms predominate. It is relatively uncommon to find any variation of the type of disease, such as alternation of epilepsy and migraine in other members of the family. Moreover, in the experience of the writer, migraine is not more common in families with bad ancestry, such as alcoholism, than in those which are above reproach, and this, also, differentiates it from epilepsy, which is recognized as a disease often replaced by other grave neuroses or other degenerative disease, and in its idiopathic form pointing pretty directly to a guilty ancestry. And, finally, few claim that epilepsy can be influenced by treating the eyes or other peripheral organs, while many cases of sick headache are so relieved. The point made is that migraine is distinct from epilepsy, and that it is directly hereditary with a similarity in families which points to a specific cause.

Now, the fact that ocular defects are handed down in families with great uniformity is so common in the experience of every oculist that it needs no especial proof. Astigmatism is not infrequently similar in kind and in axis; muscular faults are also passed on in the same way by parents. Putting these facts together, namely, the heredity of migraine of a fairly constant type, with the transmission of certain forms of ocular defects in members of the same family, the correction of which in some cases relieves the sick headache, and we have a fair basis for the assumption that sick headache, having all the clinical features of migraine, is often a reflex neurosis of ocular origin. No doubt there are many other sources of peripheral irritation—the pelvic organs, nose, digestion—which need not be discussed here.

The question I wish to raise is this: Is there such a thing as idiopathic migraine, or can we assume that where no peripheral cause is apparent, the fault is in our defective means of diagnosis? Two obstacles to a solution present themselves: (1) A mistaken or confused idea of migraine; and (2), imperfect methods of diagnosis. There are many sick headaches, which although periodic, occurring in many members of the same family, and having clinical features of a classical attack, can only be differentiated from a hypothetical true migraine by the fact that they follow some obvious peripheral cause, and are relieved when that is removed. But those who suffer in this way are subject to attacks from irritations disproportionately small. Thus, where a patient has sick headache, and is relieved by the correction of half a diopter of astigmatism, the fault is not with the eye primarily, but with the unstable nervous system which made him susceptible, and it is into this that migraine resolves itself. But the fact remains that the disease must be approached at the periphery and the hope of success increases as our diagnostic and therapeutic measures become more perfect.

This leads to the second consideration: There are in the experience of every physician, even the most sanguine specialist, many cases of inveterate sick headache which persist in spite of the most varied efforts, and which require the use of small doses of morphine to make the attacks bearable. Such cases occur, in part at least, in adults in whom the disease was neglected during its earlier stages, until the headache habit was formed. This expression "headache habit" seems useful, and does not beg the question.[4]

In some of these sufferers an early correction of some peripheral fault might have prevented the welding of the vicious circle. It not infrequently aids, even at a late date, but in other cases all attempts seem futile, and we are tempted to accept the visitation as inevitable, and to limit the treatment to the attacks.

I wish to protest against this attitude, as a weak confession of our incompetency, and I venture to assert that, as a knowledge of these cases is developed, hereditary migraine will be recognized as a reflex neurosis, consisting of an unstable organism excited by certain peripheral strains which themselves form the hereditary influences. The chief danger in the passive acceptance of the idiopathic idea is that we thereby relinquish all efforts to determine the exciting and removable factor in the etiology.

An attempt to determine the proportion of cases due to different peripheral faults would be difficult. All avenues should be tried in turn, beginning with the one in which the strain seems most obvious, but this apparent predominance of symptom is often misleading. Not infrequently sick headaches in which the digestive disturbance is conspicuous, turn out to be due to eye-strain, but there is apt to be a sequence of events which will be suggestive. Again in those who are anemic and worried, with insufficient sleep, the eyes will give out, but a correction of their defects will not relieve the symptoms unless the general hygiene is improved. In some obstinate cases it is possible that the periodic attacks are due to triacid intoxication, as is believed to be the case with cyclic vomiting, although the type of headache may resemble that helped by other treatment.

The site and character of the headache, and the presence or absence of visual symptoms such as scintillations and transitory amblyopia is of little value in diagnosis. It is often stated that an ocular headache begins in the forehead or temples, but it is often found in the occiput or the back of the neck, with some tenderness of that region, so that the patient states that he cannot lie on the back of his head during the headache.

It is very common to find a dull pain following eye work, not infrequently most severe on awakening, filling the intervals between the paroxysms. This may yield to glasses and the intervals grow longer, and in some cases the attacks may cease, showing that the condition was cumulative, and that both kinds of headache were due to a common cause; or the dull, or more constant pain may be relieved and the paroxysms may continue,

4 Gowers, *loc. cit.*, p. 839.

indicating that there is a double cause, or else that the periodic attack is a habit which remains after the cause is removed.

It will be seen that migraine should be studied statistically, not only with regard to its prognosis and the results of treatment, but as regards its natural history, and data to be valuable must contain information regarding the family history and the family anomalies of structure, as well as the character of the attacks and their relation to different kinds of strain.

When this is done there remains a broader and less definite consideration. Many patients respond to very slight excitation while others bear large burdens of uncorrected astigmatism or nasal obstruction or other peripheral strain with impunity, so that the vague personal equation is at the root of the trouble.

That the neuropathic tendency which includes epilepsy and other grave degenerative conditions also includes migraine as a frequent accompaniment is obvious, but it does not follow that the vast number of patients with sick headaches with all the earmarks of migraine, including the visual aura, paresthesia and aphasia, or their families, need fear the development of epilepsy. Many writers claim that so-called ophthalmic migraine, or the form associated with scintillating scotoma, transitory amblyopia, and not infrequently with paresthesia and aphasia, is often a precursor of epilepsy. In speaking of ophthalmic migraine, the disease sometimes called ophthalmoplegic migraine is not referred to, as that has nothing to do with migraine.

In order to obtain the opinion of a man whose experience with epilepsy has been enormous, I have asked Dr. Spratling, Superintendent of Craig Colony, for his views. He writes: "In my experience migraine is an exceedingly rare equivalent of epilepsy, and ophthalmic migraine is equally rare. . . . I have never seen such typical instances of it as have been described by Brunton." Dr. Spratling states that it is the custom in taking histories of epileptics at Craig Colony to inquire regarding the occurrence of migraine in the individual and the family.

Epileptics show the most varied structural anomalies, astigmatism and faults of the ocular muscles are among the stigmata of degeneration, but it does not follow that these defects in themselves point to a neuropathic tendency, for in a far greater number of cases they occur in average individuals—and this I believe to be the case with migraine.

It is a thankless task to attempt to define migraine. On one side the clinical picture overlaps what has been called sensory epilepsy, and on the other it merges insensibly into the many forms of sick headache or pseudomigraine. The feature which appears to characterize it in the eyes of neurologists is that true migraine is inseparable from a neuropathic constitution, of which it may be the only manifestation, and this dependence of a clinical entity upon a vague substratum which is a constant, leads to the assumption, which I believe to be unjustifiable, that the former is also always a constant, a part of the personality.

If periodic, hereditary sick headache is, in a given case, the chief manifestation of this neuropathy, or is associated with certain stigmata which are not unknown in generally normal or average people, we are forced to say that its classification first depends on its failure to respond to treatment, and until all measures have failed no case can be called true migraine, and even then we have as much right to believe that the fault is with our imperfect knowledge, as others have to state that because it is linked with permanent structural conditions, it is thereby a fixture. I do not refer to cases in families in which epilepsy or other grave neuroses are present. I merely desire to call attention to a rather naïve way of reaching a conclusion. If conclusions may be drawn from the descriptions of writers like Gowers, it does not seem probable that migraine very often occurs spontaneously, as is the case with epilepsy. The unstable organism, the gift of an ancestry which had failed to adapt itself to its environment, predisposes, but usually there is a story of stress of some kind in the individual, which precedes the attacks, and if this can be relieved or the environment adapted to the individual, the sick headache ceases. No doubt the neuropathic tendency remains and may manifest itself again in the same way or in other ways, but the condition is relieved even if, in the broadest sense, it is not cured.

It would not be necessary to dwell on this point except that many writers, especially of the French school, fail to make a clear distinction. They have taken the most complex forms of nervous disease, and by analysis have obtained all the phenomena composing them, which they group together with brilliant generalization, but they thereby ignore minor differences of type which are essential. In other words, sick headache may and often does form a part of the neuropathic constitution, but only by association with other factors, and it is justifiable to consider as true migraine cases which, because of their broader neurologic significance, are more often seen by the neurologist, and it may be wise to limit the name migraine to these cases. But the majority of cases of sick headache, periodic and hereditary, with or without aura, occur in average people and may be called benign migraine or simply sick headache, or secondary migraine, if, as I have stated, there is in most cases a probable causal factor to be sought. Or else we adopt the *reductio ad absurdum* of Moebius who says "The tendency to headache is a part of the degeneration which is inseparable from civilization."

New York School of Clinical Medicine.—It is re- staff of the New York School of Clinical Medicine, in staff of the New York School of Clinical Medicine in West Forty-second Street, has been effected. The full details of the changes have not as yet been announced, but it is expected that a complete faculty will be chosen shortly.

THE RELATION OF EPILEPSY, CHOREA AND OTHER MOTOR DISTURBANCES OF THE NERVOUS SYSTEM TO EYE DISEASE.[1][2]

BY B. SACHS, M.D.,
OF NEW YORK;
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THE special task assigned to me on this occasion is to discuss the relation of diseases of the eyes to those few functional nervous disorders which are characterized by motor phenomena. This would limit the consideration chiefly to the bearing of ocular disturbances upon the development and occurrence of epilepsy, of chorea, and of the convulsive tics. It is so easy to juggle with figures whether intentionally or not, that mere statistical inquiries have never been to my liking. Instead of offering you numerical data, I propose to state in conscientious fashion a few conclusions which have been reached after years of experience.

I wish I could assume the attitude of the judge who, after listening to long harrangues, has a right to say to the jury "No case," and thus cuts off all further discussion. Let us confess frankly at the outset that the dependence of these motor neuroses, to use a convenient term, upon diseases of the eye, has been greatly exaggerated. Cases in which such dependence could be satisfactorily shown to exist are very few indeed, and the cases in which these neuroses have been cured by treatment of the ocular condition are fewer still. There are so many loopholes by which fallacies in the argument may creep in, that unless one is very careful one's judgment is apt to be warped.

It is curious that the claim of a relation of ocular affections to epilepsy and chorea is maintained chiefly by American writers; by oculists and pseudo-oculists rather than by neurologists. In the larger monographs issued within the last ten years in Germany, in France, in England, and in this country, in which the subjects of epilepsy and of chorea have been exhaustively treated in a truly scientific spirit, mention is barely made of the influence of muscular insufficiency, of marked errors in refraction, or of any other ocular derangement upon the development of the nervous diseases which we are now considering. It must be well known to you that the Stevens Commission of Investigation,[3] appointed some fifteen or sixteen years ago by the New York Neurological Society, in a report which was signed by Seguin, Dana, Starr, Birdsall and others, stated in unmistakable terms, that after careful investigation of fourteen test cases, not a single instance could be cited in which the cure of a genuine epilepsy had followed the relief of any one of the many "phorias" with which the oculists are pleased to puzzle us. My own experience since that time, and I am certain the experience of the majority of the neurologists, has borne out the conclusions of that special investigation committee.

From time to time advocates of this special doctrine of the relation of the various phorias to epilepsy have appeared; such evidence as they have furnished appears to me to be wholly untrustworthy. In September, 1902, an article was published by A. L. Ranney on "Ten Instructive Cases for the General Practitioner Proving the Powerful Influence of Eye-strain."[1] It will not be necessary to controvert this article or to criticize each one of these ten cases, but the character of the paper is well shown by the first case which is put down as one of "absolute mental failure," and mention is made of the fact that a previous diagnosis of cerebral "softening" had been made in a man of forty-one years of age. No data are given to prove that any such cerebral softening existed, nor is any attempt made to state the possible cause of the cerebral softening. The man is said not to have visited his place of business or even paid his bills for six months prior to his examination by Dr. Ranney. He presented such serious symptoms as neuralgic attacks in the left eye and left side of the face for twenty years and also suffered "from flowing of tears over both cheeks in cold weather." (It is astonishing that some of us have escaped the cutting of our muscles during the past winter.) In view of these serious symptoms the author states he "could not divest himself of the firm conviction that organic brain disease existed and that the case was probably incurable." It does not matter what the nature of this "organic brain disease" was. Evidently the author thinks it sufficient to state that after "a graduated tenotomy of the left superior rectus muscle, as a step toward the correction of the four degrees of manifest hyperphoria, the patient, although he had been much troubled with insomnia before the operation, slept without awakening the first night after the operation," and the "absolute mental failure" of former days disappeared at once after this remarkable operation.

In a case of epilepsy which the author quotes with especial delight, it is stated in the history that the patient had been in the habit of having fits at intervals from nine weeks to four years; after the operation he had an interval of three years and eight months when the case was reported, and the cure is said to be due to the operation. Another one of these remarkable cases is that of a man who at the age of thirty, and never before, had three or four attacks (note the accuracy of the statement) of grand-mal. His ocular condition was treated and the attacks disappeared. As though three or four convulsive attacks in a man of thirty years proves the existence of a genuine epilepsy? In this entire article there is not a single case that will stand the test of scientific criticism, but since this same author finds that he can cure diabetes by the relief of eye-strain and endeavors to explain this cure by the fact that the "centers which control the movement of the

1 Read before the New York Academy of Medicine at a Meeting held March 17, 1904, under the auspices of the Section on Ophthalmology.

2 Received for publication April 5, 1904.

3 *Journal of Nervous and Mental Disease*, Vol. 14. New series 1889.

1 *New York Medical Journal*, Vol. 76, 1902.

eyes are situated in the medulla in close anatomical relationship with the diabetic center," whereas such centers are far away from the medulla, we can understand the value of such contributions to medical science.

I would not have referred to this paper if it had not been published in one of our prominent journals and if it had not been accepted by a large number of medical practitioners as evidence of the relationship between eye-strain and several of the more serious motor neuroses. It is surely to the credit of the best authorities on ophthalmology that they have taken but scant notice of these peculiar literary productions.

In the last report of the managers and officers of the Craig Colony for Epileptics,[1] dated October 1, 1903 (p. 46), the superintendent, Dr. Spratling, records the fact that Drs. Gould and Bennett were given the opportunity of carefully examining and fitting 68 patients at the Colony with glasses. While these gentlemen in an article of their own had laid much stress "on the enormous proportion of cases of injurious astigmatic and anisometropic defects among epileptic patients" they were given full opportunity to put their doctrines to a test.

Dr. Spratling gives a table in which he shows that out of the 68 cases only one derived any benefit in his disease while wearing glasses, and the table which he includes in his article is a most instructive one, which might well be read most conscientiously by all those who may in future be inclined to follow this line of work. To be sure, Dr. Gould said when the unsatisfactory results had been brought to his notice, that the results "did not affect the fundamental fact that in a certain proportion of cases the cause, or the contributing cause, may be, and is, eye-strain." He seems to regret that the younger epileptic patients have not had the constant attention of an oculist or an optician. If an author maintains such a purely unscientific attitude there is no good excuse for attempting to argue with him. When he is driven into a corner he simply attempts to fortify his position by announcing that "if proper glasses could be given as a preventive measure in young epileptics and the care of oculist and optician insured, I have no doubt that epilepsy could be warded off in a certain number of cases." Enough has been said on this subject to show that the theories advocated by these oculists with extreme views are entirely untenable.

While, as recent discussions have shown, there may be some doubt in the minds of those who are competent to discuss the subject of epilepsy, as to whether or not it be of organic origin, all are agreed that true epilepsy is a serious chronic affection of the nervous system, due to some deeply rooted changes, and that the effect of such changes becomes manifest early in the life of the patient; that the disease continues to exhibit its full force for many years increasing in severity, as a rule, and often brings about a deterioration of the patient's mental condition. That this deterioration may in part be hastened by the long-continued use of sedative drugs we must admit, but this has no bearing upon the consideration of our special subject. It is furthermore true that of all the cases of epilepsy only a relatively small proportion have been found to be curable by any known therapeutic measures, and if we may credit, as well we may, the recent reports of the physicians in attendance at the Craig Colony, the regular, systematic life of the inmates of that Colony contributes more to a cure or to a relief from the manifestations of the disease than any other agencies which have heretofore been employed.

If we wish to prove that epilepsy is due to some disease of the ocular muscles, or to some other disturbance of the eyes, the argument must rest upon evidence that such ocular disturbance has existed as long, if not longer, than the epilepsy itself, and that with the correction or the cure of the ocular trouble, the epileptic attacks have ceased. If we cannot produce such evidence, we can at most maintain that in a person who has from some other cause developed epilepsy, either through inheritance or possibly through early cerebral injuries, the ocular disturbance has led to individual epileptic attacks, just as in some persons predisposed to epilepsy the onset of an acute contagious disease might give rise to convulsions, as in others the presence of an intestinal parasite might do the same, or as in some others the accumulation of poisonous products in the gastro-intestinal tract might give rise to serious convulsions.

The question of paramount importance, however, is not what causes the individual attack, but what brings about the predisposition to such attacks, and in this instance the predisposition is the disease itself. A just inference from this argument is, that if an epileptic patient presents any marked physical disturbance, whether it be a nasal obstruction, a narrow prepuce, a discharging ear, whatever physical disturbance he may present, let that condition if possible be remedied, for it may be the exciting cause of the individual epileptic attack, but do not let us suppose for an instant that the existence of such physical condition is the actual cause of the epilepsy. It may aggravate the disease, but it has not originated it.

I am willing, therefore, to grant that it is but fair that the patient suffering from epilepsy should be given the advantage of most careful examination by a competent and unbiased oculist, and that errors in refraction, muscular insufficiency and the like, should be properly corrected. If we proceed one step further and ask whether these measures are generally successful in inhibiting attacks, I make free to answer that from my own personal experience I do not know of a single case in which the epileptic seizures have been altogether inhibited or even diminished in number by the wearing of glasses, by the cutting of muscles, or by any other ocular measures

1 Cf. Editorial in Medical News, March 19, 1904, p. 560, which appeared two days after this article was read, and independently of it.

which had been adopted. That this practice is frequently resorted to is attested by the fact that it is rare to find a case of chronic epilepsy, at least among private patients, that, in addition to the bromide acne, does not also betray the disease by the wearing of prisms. It is fortunate, indeed, for the patient, if he have not also some ocular palsy as the result of the overzealous care on the part of the oculist. I am fully aware that such zeal is founded, as a rule, upon an earnest desire to help the patient. But I have stated my own impressions rather bluntly, because as a neurologist I wish to elicit definite statements from competent oculists as to the actual benefits that have been derived to their knowledge from the treatment they have given epileptic patients.

If the ocular treatment of epilepsy were an entirely innocent affair, there would be little reason to protest against it, but in some instances more harm than good is done. I have in mind the case of a teacher who consulted me years ago, after he had been subjected to all sorts of treatment, including the cutting of his eye muscles. Up to that time he had been the victim of nocturnal epilepsy which had never interfered with his professional work. At the instance of some overenthusiastic friends, he was advised to abandon all previous treatment and to consult an oculist who promptly gave him the benefit of his surgical skill, which brought about no diminution of his attacks, but resulted in a double vision which was far more annoying to the teacher than the previous nocturnal attacks had been.

The confidence of some oculists has been so great that they have committed the serious error which the late Dr. Seguin pointed out many years ago, of abandoning all medicinal treatment and thus encouraging the occurrence of epileptic convulsions. There is surely no warrant for any such procedure; however confident the oculist may be, and I repeat there is little excuse for such confidence, it is well to continue the exhibition of drugs until the patient is well over the effects of surgical interference; then, by cautious diminution in the amount of bromides or of other drugs exhibited, let the oculist, if of unbiased mind, carefully determine whether the cutting of muscles or the wearing of glasses has been of any benefit whatever and if convinced that such procedure has not been beneficial, why not state frankly to the patient that he must resort to the old-fashioned medicinal treatment and not depend upon surgical procedures? A little conservatism in this matter will accrue to the advantage of the patient and to the ease of conscience of all honest oculists.

What has been said of epilepsy applies with equal force to the relation of eye-strain and other ocular conditions to chorea minor, or Saint Vitus' dance. Although the morbid pathology of chorea is still a matter of dispute, it is another one of the general neuroses, implying very serious disturbance of the nervous system. It follows upon severe shock, upon emotional strain, and its relation to acute rheumatism and endocarditis suggests that it may, at times, be of infectious origin. The idea that it might be due to some slight lack of adjustment in the ocular apparatus is too absurd to be considered even for an instant. The advocates of this theory may, perhaps, claim that ocular insufficiency may as well as not be considered one of the possible reflex causes of the disturbance, just as some overenthusiastic and unscientific physicians have occasionally attributed chorea minor to nasal obstruction or to some disturbance in the sexual sphere both of boys and girls, but even of this reflex origin of chorea there is very little sound proof. If true at all, it is only fair to say that the conditions just referred to may possibly prolong an attack of chorea, but I am yet to find a single case that furnishes indubitable evidence of the fact that Saint Vitus' dance was actually cured by the treatment of any one of these conditions.

There is, however, one other disease which, to my thinking, is entirely distinct from Saint Vitus' dance, but which bears a superficial resemblance to it, and may sometimes be caused by some eye-strain. This is the condition known as "habit chorea," characterized in some by blinking of the eyes, by curious movements of the nose and face, in fact, by all forms of grimaces. In others it is characterized by irregular movements of the shoulder muscles, of the head, the hands, or, for that matter, by irregular movements of any part of the body. This condition is apt to be a very chronic one and the name "habit chorea" is well chosen, for the impression that one obtains from these cases is that the habit is formed, although it may originally have been engendered by some special slight morbid condition. In these cases of habit chorea, I thoroughly believe that it is well to have the patient carefully examined for his ocular as well as for his nasal condition and any existing defect, however slight, remedied. It is these cases of habit chorea, and not cases of Saint Vitus' dance, that are relieved by such treatment as a competent oculist may suggest. It is hardly necessary to urge great care in this matter, for this special form of treatment has also been over-done. Little discrimination has been shown and choreic patients are wearing prisms very much more frequently than the condition would seem to warrant. Let a careful distinction be drawn between habit chorea and chorea minor.

Habit chorea and convulsive tic are, as far as the symptoms go, not very unlike each other, although the latter is a much more serious neurosis. Facial spasm, which is perhaps the best single example of convulsive tic, at times develops after some great emotional strain and is acknowledged by all to be rarely of reflex origin. Altogether, the more one examines into the reflex causes of well-known neuroses the more firmly is he convinced that it is always hazardous to attach undue importance to such etiological factors, and so I would consider it a sheer waste of time to attempt to prove or to disprove any bearing that an insufficiency of the ocular muscles might have upon the development of convulsive tic. Let

those who may be anxious to put this special etiological factor upon a high pedestal, furnish evidence of this relationship, the burden of proof rests upon them.

Summing up all that can possibly be said with due regard to truth, it may be stated that the relationship between ocular affections and epilepsy, chorea, and convulsive tic, may be a close one in the minds of some "faddists," but it must remain a very remote one in the minds of those who have no special axes to grind and no particular therapeutic territory to exploit.

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THE EYE SYMPTOMS OF HYSTERIA, NEURASTHENIA AND THE TRAUMATIC NEUROSES.[1][2]

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THE functional eye disturbances found in neurasthenia and hysteria are not always characteristic of one condition or the other, since the minor eye disturbances common in neurasthenia are found in hysteria also. The eye disturbances of traumatic neurasthenia or hysteria do not differ particularly from those of the non-traumatic varieties. Hence in describing these symptoms it is not necessary to classify them according to the underlying neurosis or psychosis.

The morbid states which give rise to the symptoms we are concerned with are as follows: First, the cornea and conjunctiva may be anesthetic or hyperesthetic; second, the eye muscles may be relaxed from fatigue or, on the contrary, be in a state of spasmodic contracture; and, third, the visual perceptive apparatus may show signs of fatigue, while there may be also psychical perversions of visual perceptions.

We may perhaps best cover the subject in the short time at our disposal by describing the functional disturbances as they would be brought out in a routine examination of the eyes.

The patient's subjective complaints are mostly of pain and parasthesia in various parts of the head after using the eyes, of clouds or bright spots before the eyes, and of an apparent increase or decrease in the size of objects seen. Furthermore, after reading for a length of time the print may seem to fade away because the muscles of accommodation relax from fatigue, or the print may appear doubled because convergence cannot be long maintained, or the lines of print may seem to flutter and become confusing because of the duration of their after-images in the fatigued retinas is abnormally prolonged.

On inspection a fine tremor of the lids is always noticeable when they are gently closed. There may be lacrimation, although the eye presents no signs of inflammation, and also photophobia, which causes the patient to let the upper lids droop over the pupils. This droop occurs also as a symptom of fatigue as the examination proceeds, and to overcome it one must from time to time sharply admonish the patient to keep the eyes wide open. Sometimes this ptosis of one or both upper lids may be considerable, but it is easily distinguished from paralytic ptosis, and the patient not only may fail to raise the lid when directed to do so, but also may forcibly resist the examiner's effort to raise the lid with his finger. Besides this partial closure of the lids there may be complete forcible closure in one eye or both from distinct spasm of the orbicularis muscle.

The reflex closure of the lids when the cornea or conjunctiva is touched is frequently slow or wanting, indicating anesthesia of these parts; and this anesthesia is likely to be more pronounced in the eye having the more marked disturbances of vision or on the side corresponding to a general hemianesthesia.

The pupils are usually normal in size and in reaction, although in cases of hysterical blindness they may be large and unresponsive.

The extra-ocular muscles often exhibit a lack of balance and particularly a varying latent divergence or exophoria, which may be regarded as a sign of fatigue from convergence. Again, a spasm of any of these muscles may give rise to diplopia, which might suggest an actual paralysis, but the anomalous behavior of the double images in different directions of the gaze and the presence of corroborative symptoms lead us to the diagnosis of a purely functional disturbance. As an example of this I may cite the case of a girl of twenty years recently examined, who complained of having seen double for several days. The eyes converged slightly. She had homonymous diplopia with the images level and an equal distance apart in all directions of the gaze, a condition not to be explained by a recent paralysis. Furthermore, her corneas were anesthetic and her color fields contracted. A diagnosis of hysterical spasm was made. When examined two days later the muscles were in perfect balance and no diplopia could be elicited.

Diplopia of another sort and of a purely psychical nature is absolutely characteristic of hysteria and is a very valuable diagnostic sign when it exists. This is uniocular diplopia. With one eye closed the patient sees a light double, when it is carried a certain distance away from the eye, and when asked to count fingers he sees double the number presented. This symptom was of value in the case of a man of thirty-five years who came to the Vanderbilt Clinic three months ago complaining of failing vision. He saw $^{20}/_{50}$ with each eye, the fields of vision were concentrically contracted, the optic disks were pale, within physiological limits, and the knee-jerks were unequally exaggerated, all suggesting atrophy of the optic nerves. Two weeks later he returned with a new card and I saw him. The pupils were normal, the fundi were apparently normal, and retinoscopic examination showed him to be emmetropic. When asked to read the distant test letters he hesitated. His left eye was then covered and I held up two fingers 15 feet

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[2] Received for publication March 23, 1904.

away from him and asked him how many fingers he saw with his right eye. He promptly answered four. When I held up four he said eight, and so on. When the left eye was used alone he gave similar answers. The sensibility of both corneas was found to be reduced. It was then learned that he was bringing a damage suit against a company for injuries he had received several months before. The only possible diagnosis was traumatic hysteria with functional disturbances of vision.

A similar case seen last week was in an intelligent girl of nine years, who had come to the Vanderbilt Clinic and obtained glasses correcting a low degree of myopia. She came back complaining of seeing lights in the distance double. I found that she saw a candle flame single in all directions of the gaze when it was held not more than 15 feet away. When held at a greater distance she said she saw two flames five inches apart and one diagonally above the other in all directions of the gaze. But when one eye was covered the double images were seen exactly as before—uniocular diplopia. Fingers were counted correctly at every distance. With a red glass before one eye while both were open she said she saw two red flames, but casting consistency to the winds, she averred that she saw a red and a white flame when a red glass was held before one eye while the other eye was closed. The sensibility of her corneas was reduced, but the color fields were normal, and her mother had observed no other evidence of neurotic or psychical disturbance. Her future history is likely to be interesting.

The acuteness of vision is usually normal, but the patient often reads the distant letters slowly, and with an effort, and only after considerable urging. There may be even more difficulty in reading small print near by, and the patient will hold the test card close to his face or far away or to one side, assuming cramped positions, and even repeated urging may not make him read the smallest print. But if an indifferent glass, plain, smoked or weakly refracting, is held before the eye the psychical effect is such that both distant and near vision at once become normal or as nearly normal as the patient's refractive condition will permit.

In rarer cases vision in one eye is very poor or the patient may be unable to see at all. But if we employ any of the tests for detecting simulated blindness, which all consists in arranging lenses, prisms or colored glasses in such a manner that the patient uses the eye with supposed poor vision while believing that he is using only the eye with good vision—we find that the sight of the poor eye is in fact normal.

For the still rarer cases in which there is apparent blindness in both eyes we have no test to reveal the actual amount of vision, but the diagnosis can usually be made from the presence of other hysterical symptoms, the previous history of aphonia and the like, and the lack of organic changes in the eyes. The patient, however, finds it too difficult to maintain this fiction long, and usually the vision which was lost suddenly, after a few days as suddenly returns.

Anomalies of the visual fields are the most frequent and the most characteristic eye disturbances in neurasthenia and hysteria. The typical condition if the examination is made deftly without overfatiguing the patient is a normal field for the usual white test object, a concentric contraction of the color fields in their regular order, and a diminution of central color perception in that a small area of color is not recognized as far away as by the normal eye. These anomalies of color perception are to be regarded as evidences of fatigue of the retina or of the psychical centers or of both. If the examination is tediously made or purposely long-continued, evidence of increased fatigue is manifest in further narrowing of the fields, giving them the watch spring or spiral type. That is, if the limits of the field are plotted a number of times continuously, the boundary line recorded will be a diminishing spiral.

Besides the typical concentric contraction of the color fields in their regular sequence there is occasionally a reversal of their sequence, the field for red being larger than that for blue, and occasionally a contraction of the field for white. But rarely is there a central defect in the field or a defect of a hemianopic type. The contraction of the fields is often more pronounced in the eye of the side which is more anesthetic. The size of the fields varies from day to day, and hence a repetition of the examination is often of assistance in making a diagnosis. In order to illustrate the fluctuation in the nature of the visual disturbance I may cite the case of a lady of twenty-five who complained of sudden loss of sight in the left eye. Tests for simulation showed that the left eye had in reality normal vision, and a week later the patient with this eye easily read $^{20}/_{20}$. Two weeks later, however, the vision of this eye had fallen to $^{20}/_{50}$, and there was a central scotoma for colors, which is so unusual in hysteria that if I had not observed the patient's previous symptoms I should have been inclined to diagnose a retrobulbar neuritis. A few days later vision was again normal.

The forms of the color fields in hysteria are sometimes so bizarre that they do not simulate those of any organic lesion, and the diagnosis is then easy. For example, I examined for Dr. Dana a lady with traumatic neurosis after a severe injury in a railway wreck, and found that she had normal fields for the left eye, and for the right the field for white was normal, as was also the field for a 3 mm. black dot on a white ground, the field for which is usually equivalent to that for blue. But with this right eye she perceived colors nowhere except in an area 15° in diameter, a few degrees downward and inward from the point of fixation, and in this area blue, red, and green were all recognized. When examined three weeks later the fields for white and for a 3 mm. black dot were normal in each eye, but colors were recognized only in the left halves of the field and in a small portion of the right halves.

In other words, there was an atypical right homonymous hemianopsia for colors.

It should not be supposed that these functional eye disturbances are common in young women only. Some of the most marked and most persistent disturbances are found in strong men with hysteria following injury or nervous shock, and I will conclude these remarks by describing an attack of hysteria major in a brawny mounted policeman aged thirty-six years. On November 9, 1902, he was thrown from a vicious horse and stunned, but he continued his work without interruption. Two weeks after his fall he began to hear voices while riding his beat, and the arc lamps along the suburban roads appeared, as he expressed it, "like great red bleeding hearts." On December 5, a month after his fall, he became wildly excited and dashing into the station house proclaimed with violence that he was the police captain in command. He was overcome with difficulty and taken to the Bellevue psychopathic ward. Here he continued in an excited state and complained greatly of pains in his head, which sedatives did not relieve. After three days he became rational, but was then unable to see, although his pupils were of normal size and responded promptly to light.

Five days after his admission I saw him and found his eyes so wide open and staring that the condition had been taken to be exophthalmos. The pupils were then large, the left larger than the right, and the response to light was rather sluggish. He had perception of light, but he recognized a candle flame in the nasal portion of each field only. The fundi were normal. Further examination revealed diminished hearing, diminished sense of taste on the left side of the tongue and left hemianesthesia, with some points along the spine so hyperesthetic that when they were pressed upon the patient nearly jumped from his bed with pain.

The staring look continued, the pupils responded sometimes promptly, sometimes sluggishly, and vision improved a little. After the patient had been observed and frequently examined by many physicians, Dr. Dana and others concluded that at that time he was suffering from pure hysteria, and after being kept two weeks longer in the general ward, he was discharged.

On January 31, 1903, seven weeks after his attack, at my request he came to my office for examination. He still had the staring look and could count figures with each eye at a distance of two feet only, and this only in the nasal portion of each field near the point of fixation. With each ear he could hear ordinary speech no farther away than three feet, although the tympanic membranes were normal. Sensibility was diminished on the left side of the body, taste was diminished, and he dragged his feet as he was led about. His condition gradually improved and six months later he was able to read. In January of this year, fourteen months after his attack, I found him in perfect health due, he thought, to his indulgence in violent physical exercise. His hearing was good, taste good, sensibility normal, vision had returned to $^{20}/_{20}$ in each eye, and the only sign of functional eye disturbance remaining was a marked tremor of the lids when they were gently closed.

His persistence in simulating this remarkable condition of the fields was perhaps attributable to the fact that its peculiarity had been much discussed in his hearing at the earlier examinations.

INTRAHEPATIC CHOLELITHIASIS.*

BY EDWIN BEER, M.D.,
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By intrahepatic cholelithiasis is meant the production of gall-stones within the liver in the branches of the two hepatic ducts. In these intrahepatic ducts gravel or bile-sand and real calculi may be found together. In other cases, however, the calculi are found alone, while in still others the gravel or sand alone is present.

From a theoretical standpoint, both manifestations of cholelithiasis are important, but while the calculi seem to be of practical moment, bile-gravel seems, more rarely, to lead to symptoms. The calculi being the adult form of intrahepatic concretions and the gravel being the infant form, most of the remarks that follow, though applied to the calculi proper, will be equally true of the gravel concrements, but as will be evident, at times to a lesser degree, owing to the smaller size of the latter.

Intrahepatic cholelithiasis has been known for a long time and scattered through the literature of more than two centuries are lists of cases. I doubt, however, whether all these cases, the fruit of many years' collecting and observation, would reach a total of one hundred and fifty. The causation of intrahepatic stones, their frequency of occurrence and their other characteristics have received but scant attention, though occasionally authors, especially Körte,[1] have hinted that intrahepatic stone formation might be of vast import in the prognosis of cholelithiasis.

To study these relations I began the present investigation, and have examined a large number of selected cases, which I believe will throw some light on the frequency of occurrence, causation, structure and composition of intrahepatic calculi. That such an investigation is particularly timely, now that surgery is so frequently called upon to deal with gall-stones, no one can deny. Moreover, a recent article from Kehr's Clinic by Berger[2] and a more recent one by Kehr[3] himself, have suggested to me that this whole subject of intrahepatic gall-stones requires a careful study, and may be much more important than medical men in general believe. According to these writers, in the after-treatment of cases of common duct obstruction caused by stones, in an astonishingly large number numerous stones and fragments of stones were discharged from the drained hepatic duct. That all these stones and fragments were not of

* From the Laboratory of Professor Weichselbaum, Vienna.

intrahepatic origin seems likely, but that some were, can not be doubted. The great emphasis that Kehr and Berger lay upon getting rid of all these stones, if recurrence is to be avoided, shows at once how important is the whole question of the production of stones within the liver ducts.

A study of this condition throws light on a great many of the problems connected with cholelithiasis, both those of etiology and therapy. Moreover, an understanding of this condition must naturally have a bearing on prognosis.

A short review of the known facts on this subject is quite necessary. Stones were noted in the liver ducts in the eighteenth century, in fact, even earlier. Glisson found them in cattle, whereas others have described them in man. Morgagni[4] collected the known cases, but up to the latter half and the end of last century cases and facts have been very scarce. Frerichs[5] reports having seen five cases, and in view of his large experience, that is very surprising. Thudichum,[6] who attempted to find the nucleus of many gall-bladder stones in the liver ducts, reports that in five per cent. of the livers of patients suffering from cholelithiasis such stones occur. Most subsequent workers have either ignored or been unable to verify Thudichum's observations. These find that intrahepatic stones are not as frequent as he declared, nor can they with any regularity be traced to the gall-bladder, where they should grow, according to Thudichum, into the gall-bladder calculi. In 1891, Courvoisier[7] collected all the known cases, and in all found 50 in the literature. This meager number, which includes many cases in which gravel and not stones were found, gives a fair idea of the observations previous to that date, though scarcely of the frequency of occurrence of intrahepatic stones, as no investigator seems to have bothered about a systematic study of the question.

Since Courvoisier's statistics have been published, other cases have been reported, and in more recent publications of work along these lines, intrahepatic stones were found more frequently. Peters,[8] for instance, in 161 cases of cholelithiasis, found intrahepatic stones but once. Hünerhoff[9] in 85 cases of cholelithiasis found stones in the intrahepatic ducts once. Schroeder[10] of Strassburg finds intrahepatic concretions in nine per cent. of the gall-stone cases that he reported. The value of these three papers is very slight, as the work is in no wise personal. The papers are reports drawn up from autopsy notes which are spread over a great many years. Schroeder's work, for instance, consisted in looking through autopsy notes, and, judging from his paper, his cases which Naunyn so repeatedly cites, showed calculi only five times. The other eight cases, making his total of 13 or nine per cent., were gravel. The value of all such data is, to a great extent, lost, because the figures can not indicate what really existed, and what might have been found had the ducts in every case been carefully and systematically followed, and the etiological factors investigated. Niemer,[11] Kehr,[12] Riedel[13] and Lenhartz[14] have reported further cases, but no one seems to have looked into the question thoroughly. My results, based on such a study, will therefore be all the more interesting. In my series of 250 cases, I have found calculi five times, and once only gravel in the intrahepatic ducts. In a total of 72 cholelithiasis cases 8.3 per cent. showed intrahepatic stone formation.

These new data go to show that intrahepatic stone formation is not as uncommon as was once thought, and later it will be seen that under certain circumstances this intrahepatic production of stones is a more or less regular occurrence.

Before leaving the question of the frequency of intrahepatic stones, it would be well to state the views of Naunyn and Hoppe-Seyler, who seem to think intrahepatic calculi are even more common than the above data indicate. Naunyn[20] says: ". . . dass sie (Bilirubin-Kalksteinchen) häufig in den Gallengängen der Leber entstehen." Hoppe-Seyler seems to accept a similar frequency. On what these opinions are based I do not know, but they are strikingly in contrast with the other publications just cited.

The highest statistics so far published are those of Schröeder and myself. In eight or nine per cent. of cholelithiasis cases intrahepatic stones were found. (In Schroeder's statistics most cases were gravel.) As in general seven per cent. of corpses, or according to Schroeder's statistics twelve per cent., have gall-stones, intrahepatic stones might be present once in 160 or in 100 cases, respectively. That can scarcely be called a frequent occurrence. Under certain conditions, such intrahepatic calculi are found very frequently, but one might open many hundreds of livers, in which these conditions were not present, and never find a sign of intrahepatic stone formation.

The causation of these intrahepatic stones has always been very obscure. At first the process was explained as mechanical; later a chemical explanation was proposed. Frerichs[15], in 1858, opposed the purely mechanical views, saying that "the simple concentration of bile can not be looked upon as the cause of the precipitation of the substances that go to the formation of gall-stones. These substances remain in solution as long as the bile is unchanged—that is, until the bile had been chemically changed by the action of the gall-bladder mucus." "The beginning of the precipitation of pigment, cholesterin, bile sand, calculi and powder-like structureless deposits are found wherever the liver secretion becomes stagnant and the bile is decomposed." Thudichum,[16] though he thought intrahepatic stones more frequent, interpreted their formation in much the same way. He attributed the production of intrahepatic stones "to a disease of the bile and a partial obstruction of one or more of the biliary ducts. Courvoisier,[17] after reviewing the 50 cases that he gathered, came to no absolute conclusion as to the cause, though he was inclined to think that "obstruction to the flow of bile increases the chances of intrahepatic cholelithiasis." He adds, however, that this is not his own idea, and that in 1580 Caspar Meyer

had expressed the same view, with this in mind Courvoisier thought that in cases of choledochus obstruction, the condition should be relieved early to avoid a secondary intrahepatic production of stones.

In 1892 Naunyn added a new turn to the question of causation. He showed that obstruction, pure and simple, would not suffice, as the intrahepatic stones were made up in greater part of bilirubin and its oxidation products in combination with calcium. This combination never occurs in stagnant bile, if no other factors come into play. These other factors, he thought, were the direct "influence of the living mucosa of the gall-bladder." "Perhaps bacteria are at fault, for they readily wander into the biliary system, when stagnation is present, and cause oxidation of the bile."[18] Though Naunyn, in general, attributes some importance to the effects produced by the poisons of the bile in gall-stone production, he does not expressly state such a cause in this connection. This new factor was first outlined by him at the Tenth Congress für Innere Medizin, and later developed in his book. At the Congress, Mosler,[19] in the discussion, said that intrahepatic calculi must be interpreted as the result of cholangitis. He did not avow the direct action of the living tissue, nor emphasize the necessity of obstruction; nor did he advance any arguments for his statements or proof of them. More recently (1899) Hoppe-Seyler has to a certain extent combined the views of Naunyn and Mosler. He says intrahepatic stones are most frequent in cirrhosis hepatis and also when the common duct, or hepatic ducts, are obstructed by tumors, parasites, or calculi. In these latter cases, the infection of the biliary passages, *i.e.* cholangitis, and the formation of bilirubin-calcium stones, which he adds may become the nucleus of larger stones in the gall-bladder, developed side by side. Naunyn in a note was more guarded, saying: "Frequently one finds in those cases that have intrahepatic stones, general bile stasis throughout the liver, *e.g.*, in tumors, cirrhosis, chronic congestion."[20] Riedel,[21] in 1903, said that intrahepatic stones were rarely primary, but could develop secondarily after obstruction of the ductus choledochus by concretions.

Before closing this review, it must be stated that Charcot[22] attributed the presence of some of the intrahepatic stones, to wandering of stones from the gall-bladder into the ducts. Though Charcot thought of the possibility of stones passing from the gall-bladder through the cystic duct, and then up through the hepatic into the liver, he also acknowledged an intrahepatic development. These, he incorrectly stated, have "jamais . . . la structure radiée, les couches concentriques, ni les facettes qui distinguent les calculs nés dans la vésicule." In 1897, Langenbuch[23] expressed the identical opinion. He opposed Körte's interpretation of Sendler's[24] case,* saying that the stones that were found in the liver, were derived from the gall-bladder, and gained their intrahepatic position, perhaps as the result of aspiration by the liver. Langenbuch will admit the intrahepatic formation of minute bilirubin-calcium stones, but he draws the line at other stones just as Charcot did, without giving any valid reason for doing so.

That stones may occasionally wander into the right or left hepatic ducts and thence into the larger liver ducts when the choledochus is obstructed, can not be denied. Such a case, I myself have seen, finding two gall-bladder stones that had wandered into the first division of the left hepatic duct. But to apply that process to those cases in which the ducts throughout the liver are filled with a large number of stones, as in Sendler's and many other reported cases; or, when the stones are arranged, more or less like graduated beads, the smallest being far in the liver in the hepatic radicles, and the largest near the hepatic duct, is surely going too far. Stones that have wandered must present the shape and size, as well as the composition of the stones that are found in the gall-bladder. To these requirements the intrahepatic stones in all my cases, to be cited later, in no wise conform.

Most writers, on the other hand, have taken so little note of this interpretation, that in their reports no discussion of it or comparison between the gall-bladder and hepatic stones are found. The size of intrahepatic stones is usually smaller than of those found in the bladder; their shape often altogether different, being frequently ovoid, or more or less cylindrical. Their close relation to the walls of the ducts, in which one may find some soft cast-like stones, already composed of definite layers of pigment and cholesterin; their location in some peripheral part of the liver; all these facts preclude a general application of any such interpretation as Langenbuch's. The older stones, as well as some of the younger ones, are often distinctly facetted, and if many stones form in the ducts they seem to conform to the rules that obtain in the gall-bladder and are facetted.

This brief outline will give an idea of the many views that have been entertained, both as to the frequency of occurrence, and causation of intrahepatic stones. As Courvoisier said, the views found in the literature are extreme, and as this seems to be due to the fact that nobody has undertaken the regular examination of a large number of livers, both normal and abnormal, for this particular purpose the above-mentioned difference can be readily understood. Hofrat Weichselbaum kindly allowed me to dissect a large number of livers at his institute in Vienna, for which I take this opportunity to thank him very cordially.*

The livers were obtained after demonstration,

* Male patient, 50 years old. Sick on and off for two years. Pain in the right side. Vomiting—once icterus. One typical gall-stone colic. Developed an abscess in right hypochondrium which closed rapidly after incision, except at one spot, where biliary fistula persisted. One and one-half years later, chill, pain, icterus, vomiting. Bile discharged through fistula in very large quantities. Operation disclosed a gall-bladder full of stones. After discharging many stones the wound closed. Later it opened again as icterus and chill developed. Death occurred two and one-half months after last closure of wound. Autopsy showed a much contracted gall-bladder—several stones in the choledochus. A large number of small and large stones throughout the liver ducts. Some of these were facetted. Their size varied from that of a pea to a cherry-pit.

* Some of the earlier cases were studied in Prague. For the permission to use them I wish to express my thanks to Hofrat Chiari.

and the hepaticus branches were followed to the peripheral parts of the various lobes. Naturally the largest ducts alone could be inspected, and also only a small fraction of the whole intrahepatic duct apparatus, as the following of one duct into the liver substance destroyed many others that lay near it. In cases of obstructive jaundice, or cases of past obstruction of the common-duct, when the ducts were dilated, the following of the intrahepatic ducts is a very simple matter. In other cases, the size of the lumen of these ducts varies considerably, but only when the lumen is extraordinarily small does one find any difficulty. Even here it is readily overcome by practise and care.

In the 250 selected livers that I examined, there were 72 cases of cholelithiasis; of these six had one or more stones in the choledochus with secondary cholangitis. There were four cases of obstruction of the common duct, due to tumor, etc., and secondary cholangitis, without any gall-stones in the gall-bladder and large ducts. There were 71 cases of intrahepatic obstruction of the ducts, including metastatic tumors, ten; cirrhoses, thirty; abscesses, four; chronic congestion, twenty-seven. In addition there were amyloid and fatty livers, as well as normal organs.

SUMMARY OF THE 250 CASES.

	Times.		Times.
Cholelithiasis without complications	66	intrahepatic cholelithiasis	0
" and cholangitis, choledochus obstruction due to stone	5	do	5
" and old obstruction of choledochus due to stone (?)	1	do	1
Tumor or cyst obstructing choledochus and cholangitis	4	do	0
Metastatic carcinoma of liver	10	do	0
Cirrhosis hepatis	30	do	0
Abscess-pyelophlebitis	4	do	0
Chronic congestion	27	do	0
Atrophic-fatty-amyloid livers	39	do	0
Normal livers	64	do	0
	250		6

The six positive cases, as well as the four cases of common-duct obstruction, with secondary cholangitis, are briefly described below:

Case I.—Cholelithiasis, Choledochus Obstruction, Cholangitis, Intrahepatic Calculi and Gravel.—Female; no history obtainable. Autopsy showed very marked distention of the extra and intrahepatic ducts exclusive of cystic duct, chronic cholecystitis, with stones in the gall-bladder, two large calculi in choledochus and hepaticus. These were intensely inflamed and ulcerated. In the distended intrahepatic ducts throughout the liver several hundred calculi and a great deal of gravel. Stones and gravel were yellow in color. Similar deposit about the gall-bladder, and extrahepatic duct stones. The size of the intrahepatic calculi varied from that of a pin-head to that of a cherry pit. Many stones already show signs of facets—some of the larger stones are regularly tetrahedral. Most, however, are ovoid or spherical in shape. The intrahepatic calculi are smaller than the extrahepatic. In the latter is found an almost pure cholesterin nucleus about a central pigment mass, and as said above, this nucleus is covered by a yellow shell of pigment calcium. These nuclei are of the same size in all the extrahepatic stones, and are, in size, larger than the largest intrahepatic stones, which contain no such nucleus, and are almost a pure pigment calcium combination. The liver otherwise negative.

Case II.—Cholelithiasis, Choledochus Obstruction, Cholangitis, Small Black Sand-like Concretions in the Intrahepatic Ducts.—Male, 67 years old; no history obtainable, as patient was admitted moribund and markedly cholemic. Autopsy showed stones in gall-bladder—one stone impacted at papilla. Catarrhal cholangitis, but no pericholangitis. Contents of ducts muco-pus and bile with many small black concretions. Liver otherwise normal.

Case III.—Cholelithiasis, Choledochus Obstruction, Cholangitis, Intrahepatic Calculi and Sand.—Female, 27 years old; four or five weeks fever and icterus; well previously. Autopsy showed six stones in choledochus, which was full of pus; several stones in the hepaticus, multiple abscesses in the liver. In the intrahepatic ducts, numerous calculi and small sandlike concretions. Of the calculi, one was distinctly tetrahedral and as large as a grape pit. All were black. Soft calculi arranged in layers of pigment and cholesterin were found fitting like casts in the intrahepatic ducts. Liver otherwise normal.

Case IV.—Cholelithiasis, Cholecystitis, Choledochus Obstruction, Cholangitis, Intrahepatic Calculi and Gravel.—Female, 66 years old; three and one-half months before death, pressure in epigastrium and occasionally pain, anorexia, frequent vomiting towards evening, stool normal, marked emaciation, no icterus, slight fever (perhaps due to pleurisy) on one day, liver slightly enlarged, gall-bladder region tender, urobilinuria, ten days prior to death icterus developed. Autopsy showed acute inflammation of the gall-bladder, obstruction of choledochus by three stones. Ducts contained pus and erythrocytes, cocci, bacilli, epithelial cells and a large number of non-facetted, hard, yellowish red calculi almost as big as cherry pits (bearing no resemblance to the extrahepatic calculi); also gravel. Liver otherwise normal.

Case V.—Cholelithiasis, Cholecystitis, Choledochus Obstruction, Cholangitis, Intrahepatic Calculi and Gravel.—Male, 65 years old; pain, colic and tenderness in upper abdomen; sick in all about four weeks (anamnesis very inadequate). Autopsy showed general icterus, perforation of the gall-bladder due to ulcerative cholecystitis, four stones in gall-bladder, stone in choledochus, which was filled with pus. Intrahepatic ducts well dilated, containing about 30 pure black pigment stones, most of these a little larger than the head of a pin; one stone elongated, and almost a centimeter in length. Pus and fine pigment particles also present in intrahepatic ducts. Liver otherwise normal.

Case VI.—Gangrene of Lung, Cholelithiasis, no Icterus, Intrahepatic Calculi, no Cholangitis.—Male, 79 years old; history contains nothing about cholelithiasis; patient septic on admission; no icterus. Autopsy showed enormous dilatation of the choledochus, so that at first it was mistaken

for an accessory gall-bladder. No obstruction noted by the prosector. In left lobe two calculi as large as cherry pits, one distinctly facetted and the other well rounded; both yellow in color, with streaks of black pigment. All intrahepatic ducts much dilated. Several stones in the gall-bladder much larger than those in the liver. Liver atrophic. No cholangitis.

Case VII.—Carcinoma of Pancreas, Cholelithiasis, Cholangitis, no Intrahepatic Calculi, Obstructive Jaundice.—Male, 44 years old; no history obtainable. Very marked distention of the common, hepatic, and intrahepatic ducts. Pus in all ducts; no pigment masses, concretions or calculi.

Case VIII.—Carcinoma of Papilla, no Cholelithiasis, Obstructive Jaundice, Cholangitis, Multiple Small Hepatic Abscesses, no Intrahepatic Stones.—Male, 56 years old; eleven months before death had choledochus obstruction and cholangitis; three months later improved so that he could eat and work; no fever and only slight icterus during this period of remission. Five months ago a new attack of choledochus obstruction and cholangitis, which led to his death. Autopsy showed enormous distention of the common, hepatic, and intrahepatic ducts. All filled with pus; no sand or calculi found. At papilla, moderately large obstructing neoplasm.

Case IX.—Papillary Carcinoma of Gall-Bladder, Metastases in Choledochus, Obstructive Jaundice, Cholangitis, no Cholelithiasis, no Intrahepatic Calculi or Gravel.—Male, 74 years old; occasional pains in abdomen, during past four years. Five to six weeks before death had cutting pain in right hypochondrium. This came in attacks. Three to four weeks before death, pain became more severe, and chills began. Progressive emaciation. Never vomited spontaneously. No previous history of gall-stones. Autopsy showed a primary carcinoma of the gall-bladder, without any stones. A metastasis in the choledochus, and a dilatation of the ducts behind the obstruction. In choledochus, etc., and intrahepatic ducts, no calculi or gravel. Multiple abscesses in the peripheral parts of the liver, especially in the left lobe. Pus throughout intrahepatic ducts.

Case X.—Suppurating Echinococcus Cyst of Liver, Obstruction of Extrahepatic Ducts, Catarrhal Cholangitis, Chronic Cholecystitis.—Female, 27 years old; six months before death noted a tumor in right hypochondrium; no tenderness or pain, no colic, no vomiting nor icterus. Tumor was smooth, and seemingly of liver origin. About five months ago, gradual onset of icterus; no nausea or vomiting. Was able to continue work. Four to five weeks before death severe pains in region of tumor; no colic or cramps. Pains did not radiate. Never passed stones. Stools at first acholic, later somewhat colored. Temperature while under observation showed daily afternoon elevations. Autopsy showed a suppurating echinococcus cyst in the neighborhood of the porta hepatis, with considerable cicatricial tissue about its wall. Both processes obstructed the hepatic and common duct, and produced a moderate dilatation of the intrahepatic ducts. Mucosa of these, and of the hepatic duct, very much injected, and covered with tenacious mucopus and bile. No sign of stone formation. No gravel or calculi. Gall-bladder showed thickening of its walls and contracted lumen. Evidently the chronic cholecystitis had not led to gall-stone production.

In all these cases intrahepatic stones were found six times, and only in those cases where extrahepatic cholelithiasis was present. In all the other cases my search was in vain. Of the cholelithiasis cases only those that had or had had an obstruction of the choledochus by stones and secondary cholangitis showed intrahepatic stones. Cases of cholangitis secondary to tumors obstructing the common duct without extrahepatic cholelithiasis showed no intrahepatic stones. Moreover, all the other cases were negative, showing that the occurrence of intrahepatic stones of intrahepatic origin must be attributed to at least three different factors, obstruction, cholangitis, and a third unknown factor, otherwise, the obstruction of the common duct and secondary cholangitis, in the cases of tumor of the papilla and pancreas, etc., would have led to the formation of stones within the liver.

Similar cases in the literature I should not like to make use of, as the cases often lack important details in the various publications, and there is no guarantee that a thorough search for stones was made.

Just the nature of this third factor need not be discussed here. It must, however, be emphasized that choledochus obstruction, by stone, when followed by a cholangitis, leads to intrahepatic stone formation. On the other hand, cases of cholangitis in non-cholelithiatic patients do not develop intrahepatic stones. Whether this will be found true in a more extended experience time must show. Cholangitic material is very scarce, even at such an institute as that of Professor Weichselbaum.

The stone production seems to be just as likely to take place whether the cholangitis is severe or moderate, which is opposed to the present conceptions based on the work of Mignot,[25] Miyake,[26] and others. These experimenters showed that a mild infection of the gall-bladder by different bacteria frequently led to the formation of gall-stones, whereas a severe cholecystitis was fatal before stones formed. In the livers in my cases the ducts were several times full of pus and desquamated epithelium post-mortem, and once already noted at operation, when the choledochus was incised. Still, stones had developed.

It is well known since Netter and Homen's[27] experiments, that obstruction of the common duct leads to infection of the more central branches of the biliary system. Coli communis, staphylococci, streptococci, etc., wander in, and a more or less extensive cholangitis results. On post-mortem material such as I had, it is impossible to determine which bacteria are at the bottom of the trouble. As von Mieczkowski's[28] work has shown,

the post-mortem bacteriological examinations of the biliary passages lead to great errors. L'Etienne found, in 24 out of 42 normal cases, bacteria in the bladder bile obtained post-mortem, whereas von Mieczkowski, obtaining the bile directly from the aspirated gall-bladder during laparotomies, found it sterile, in the 15 cases examined.

The reports of Kehr[29] and of Riedel[30] are particularly valuable, as they worked with fluids in cholangitic cases obtained during life. In nine cases of choledochus obstruction reported by Kehr *bacterium coli* was present seven times, *streptococcus pyogenes* (*longus*) twice, and *staphylococcus pyogenes aureus* twice, in the bile discharged from the drainage tube. In every case the flowing bile was infected, agreeing thus in the main with animal experimentation, *i.e.*, ligation of the choledochus. Riedel's statement is very much to the same effect. In cases of stone in the choledochus causing obstruction, he found in 30 per cent. of 53 cases that there was infection of the gall-passages. Even this estimate is probably too low, judging from the animal experiments in which obstruction of the choledochus led almost regularly to cholangitis. My cases agree very well with the experimental work in the regularity of the development of cholangitis after choledochus obstruction. As experimental work has shown that the kind of micro-organism does not affect the chances of stone production, and as the same varieties are almost constantly present in cholangitis cases, one can not explain the non-formation of stones in cases (VII, VIII, IX and X) of tumor plus cholangitis, by supposing this series of cases to be due to different bacteria, from the other series, in which stones developed.

Another important factor is the time in which stones develop. Hansemann[31] only a few years ago said that nothing is known about this, but since then stones have been repeatedly produced artificially. Homens (cp. Hansemann) had noticed the formation of stones about sutures in the gall-bladder in one and two-thirds years, and Hansemann says he saw a similar case of stone formation in the duodenal wall about a silk suture in seven months. Since then stones have been produced experimentally in one-third to one year. Naturally, in these cases, stones were present even earlier, though smaller in size. In one of my cases I found a tetrahedral stone in the intrahepatic ducts four to five weeks after the commencement of symptoms of obstruction and cholangitis (Case III). Within two months, making allowances for all discrepancies in the anamnesis, stones can develop, and, in this case, a stone the size of a grape pit was found. Thus the element of time will be a factor in the production of intrahepatic stones, in cases of cholangitis.

In the cases (VII-X) of cholangitis with obstruction due to neoplasm, etc., the absence of stones, or gravel, in the ducts could not, however, be due to this factor, as, according to the history, and the evidence furnished by the liver, the obstruction and cholangitis had existed for weeks.

It is thus evident that stone obstruction of the common duct, plus cholangitis, often leads to intrahepatic stone formation. Many cases, however, can be found in the literature, of just this complex, without mention of intrahepatic stones. Whether following the ducts would have shown stones in these cases, it is impossible to say, but the frequency with which I found them seems to point to that conclusion.

In my positive cases, I had one in which stones were found, but no cholangitis was present (Case VI). Some of the largest stones, the size of cherry pits, were in this case. The history of the patient was incomplete, but at autopsy, an enormous dilatation of the choledochus without icterus was found. Stones were in the gall-bladder, and two stones deep in the left lobe of the liver. No signs of cholangitis existed. The stones were of good size and they had been there some time, as was shown by their size and close relation to the duct in which they were found. The dilatation of the biliary passages pointed to an old obstruction. The stones in the gall-bladder, which bore no resemblance to those in the liver, were a ready explanation of the obstruction, and, I think, knowing how regularly an infection follows impaction of a stone in the common duct, that it is justifiable to conclude that in this case a secondary cholangitis led to the stone formation in the liver ducts. The cholangitis subsided as the stone in the common duct passed into the bowel. The choledochus remained hugely distended, some stones were left in the liver, while probably many similar ones had passed into the bowel. Many of the cases in the literature are probably just like this one. Many stones are found in the liver at autopsy, but no cholangitis is present at this time. The ducts are dilated, showing an old obstruction, and the cause of the whole process has been passed into the bowel. In my case, the stones were altogether different in shape, size, and constitution from those in the gall-bladder, so that no chance of an extrahepatic origin of these calculi can be considered. In Czerny's case of chronic obstruction of the choledochus, lasting some 14 years, a similar condition seems to have been present. In this case, which I cite in brief below, as it is an excellent example of these cases, the ducts in the liver were filled with stones.

Case XIII of Mermann's[32] paper on Czerny's cases. J. O., 42 years old; had passed stones through bowel. For 14 years had been getting more and more icteric. Repeated Carlsbad treatment without any benefit; rather, perhaps, increase in jaundice after these "cures." Operation disclosed nine stones in the gall-bladder. Autopsy showed much distended choledochus which was filled with stones of hazelnut size. The hepatic ducts and their peripheral branches in the liver were much dilated and filled, far into the liver, with calculi, which varied in size with the lumen of the intrahepatic ducts, getting smaller the deeper in the liver they were found. The smallest were no larger than small seeds."

Before describing the stones that I found, and

the results they may lead to, I wish to mention the cases of Courvoisier and of Kehr. In a great many of the reported cases, the authors fail to say whether their patients had suffered from cholangitis, jaundice, extrahepatic cholelithiasis, or not, so that it would be useless to attempt a statistic on such unsatisfactory data. It is, however, noteworthy, that in the cases up to 1890, Courvoisier found cholangitis in 15 out of 52 cases of stones in the hepaticus and its branches.

From the above remarks, based on my cases, and the examination of Kehr's, and other reports, the fact that cholangitis is a most important factor in the production of intrahepatic stones can not be denied. Kehr has published a large number of cases of hepaticus drainage, and in a large percentage during the after-treatment stones and fragments of stones were discharged through the drainage tube. How many of these stones were of intrahepatic formation and origin it is difficult to say. In cases that discharged a large number of stones during the after-treatment, which Kehr could not feel in the ducts at operation, it is likely that an intrahepatic production of stones took place, and that these stones were derived from the intrahepatic ducts; the same applies to those cases in which numerous calculi were discharged for many days after the operation, as one would expect the calculi that had escaped the operator's finger to be discharged early, provided they were extrahepatic.

Now, looking through his cases and carefully considering these points, amongst the 17 cases that showed such a discharge of numerous stones after operation, and for a considerable time, there are at least six, perhaps seven, which seem to me probable cases of intrahepatic cholelithiasis.

To avoid any misunderstanding about these cases, I quote them below, abbreviating as much as possible the original publication, but giving all the essential points in the author's own words:

KEHR'S CASES.

Case XI.[33]—E. W., fifty-one years old. History of long standing cholelithiasis with frequent attacks of colic and jaundice. Six weeks before operation a severe attack—jaundice persisting. Fever for a few days. Another attack two weeks before operation.

Diagnosis—Choledochus obstruction due to stone. Cholangitis.

Operation—Choledochotomy. Hepaticus drainage. May 6, 1901. Gall-bladder very small. Contains no stones. Choledochus markedly dilated and contains two large and about 200 small stones. Hepaticus contains foul smelling, turbid bile, mucosa is gangrenous. In branch of hepaticus a calculus is impacted which can not be loosened.

May 7—300 gm. bile discharged. Still malodorous.

May 9—No bile discharged.

May 11—Icterus more marked. Stool probably contained bile on day before this.

May 14—Irrigation of hepaticus and choledochus. Many stones were washed out.

May 16—20 stones from the hepaticus, two of the size of hazelnuts.

May 17—A stone of the size of a pea washed out, otherwise the hepaticus is free.

May 22—Small sandy material washed out.

May 27—Washed out small fragments.

Sept. 13—Wound closed and patient in good condition, but three months later (*Berger, Langenbeck's Arch.* 69) discharged two more small stones and fragments. Later colic, icterus, chill, which were followed by death within two weeks.

Case XII.[34]—J. Sch., thirty-four years old. History of stomach trouble of several years' duration. Six years before operation colic, icterus, vomiting. Repeated colics since then. Seven weeks before operation very severe colic lasting ten days. Marked icterus. Since that attack, repeated mild colics. Emaciation.

Diagnosis—Stones in gall-bladder. Probably stone in choledochus.

Operation—Ectomy, Choledochotomy, Hepaticus drainage. August 21, 1900. Many stones were found in gall-bladder. Stone in cystic duct which reaches into choledochus. No other stones in choledochus. Bile flowing from hepaticus is turbid.

Sept. 2—Irrigation of hepaticus brought away small stones.

Sept. 3—No further stones. Discharged cured. But (*Beiträge zur Bauchchirurgie*, 1902, p. 98) four weeks later a severe colic and vomiting. Scar gave way and bile discharged. Colics returned every four weeks. After these slight icterus. On June 4, 1901, severe attack.

Diagnosis—Stone in choledochus.

Operation.—Duodenotomy (McBurney). Removal of a pea-sized calculus in papilla.

Epicrisis—Stone in the duodenal papilla overlooked at first operation.

Case XIII.[35]—Female, fifty-four years old. Operated February, 1893. Cholecystostomy. One stone found.

One and three-fourths years later again colic and icterus. Passed a stone which contained a silk thread.

One year later (October, 1895) had cholangitic symptoms. Again cholecystostomy. Bladder contained foul bile, and one stone with silk suture as nucleus. Patient improved, but continued biliary discharge pointed to choledochus obstruction. Operation disclosed stone in common duct, but it broke into pieces before it was removed. Abdomen closed, as nothing else was felt. Fistula remained open one-fourth year. Bile flowing, so that obstruction still persisted in choledochus. Shortly after refusing operation, fistula closed without pain. No stone in stool. About one-half year later, having been well during this period, suddenly fierce colic and icterus. High temperature, liver tender, pulse rapid, etc.

October, 1896, gall-bladder opened. Purulent bile and no stones in it. Choledochotomy showed large stone. Irrigation of ducts (hepaticus and choledochus) brought to light a mass of concretions. Irrigation continued for one-half hour.

In after-treatment a large quantity of similar fragments were discharged through the drainage tube.

Case XIV.[36]—F. Str., forty-eight years old. *History*—Two years before operation colic, icterus, vomiting, chill. Three months before operation another severe colic. This recurred frequently of late, and three weeks before operation a particularly severe attack.

Diagnosis—Cholecystitis. Stone in choledochus. Pericholecystitis.

Operation—Ectomy. Choledochotomy. Hepaticus drainage. June 17, 1900.

Gall-bladder is large. Contains many small stones, and turbid sero-bile. In choledochus and hepaticus about ten stones. Bile in ducts foul and turbid.

June 27—Hepatic duct sounded, two pea-sized stones washed out.

July 1—The sound feels a stone in the hepatic duct.

July 2—This stone removed by washing.

July 3—Seven cm. above the incision the sound feels a concretion in the hepatic duct.

July 4—Two concretions of the size of peas taken out.

July 5—Another stone removed.

July 8—In the depth of the hepatic duct another stone.

July 10—Stony particles flow out of the hepatic duct.

July 12—No more stones discharged.

September 6—Patient leaves hospital cured.

Case XV.[37]—D. B., fifty-seven years old. 15 years before operation, colic and slight icterus. Two years before operation severe colic, fever and chills. Directly before operation, quiescent.

Operation disclosed four fair sized stones in the common duct. In after-treatment 18 stones and many fragments were discharged through the drainage tube, during more than two months.

The following cases, with autopsy notes, as will be seen, corroborate the above interpretation of the preceding cases as well as my observation based on my own cases.

Case XVI.[38]—During operation on patient, who had been sick for three months with symptoms of cholangitis, a stone was found high up in the hepaticus. After removing it, bile flowed freely. Hepaticus drained seven days after operation. Three stones were discharged. On the eighth day, more stones were discharged from hepaticus and still more felt in depths. Patient died of pneumonia, and autopsy showed in the dilated intrahepatic ducts of second and third degrees more than twelve stones, the size of cherry pits.

Case XVII.[39]—Cholelithiasis gave symptoms three years before operation. Six months previous to operation colic, icterus, peritonitic irritation. Then improved, but four months before operation patient became sick again. At operation cholangitis and stone in choledochus. Also stones in gall-bladder. Death ten days after operation. Autopsy showed 20 small stones in left hepaticus and branches. In the branches of the right hepaticus there were 12 small stones as large as cherry pits. Ducts contained mucus and pus.

In these cases definite signs of cholangitis were present, before or during the operation, and here again we see the common cause of intrahepatic stone formation, a secondary cholangitis following an obstruction of the choledochus by stone. In one of these cases (Case XVI), the intrahepatic stones formed within three months, agreeing with my above post-mortem results. Whereas in one of my cases the stone was small four to five weeks after the onset of cholangitis and obstruction, in another case of my series, and in one of Kehr's cases, autopsy revealed stones the size of cherry pits three months after the commencement of the trouble.

(To be continued.)

THE VALUE OF A KNOWLEDGE OF ABNORMAL MOBILITY OF THE IRIS AS AN AID IN DIAGNOSING DISEASES OF THE NERVOUS SYSTEM.[1][2]

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SWANZY, a distinguished oculist and brilliant writer, says that the condition of the pupils, whether dilated, contracted or normal, is of very slight significance or value in the diagnosis either of the kind or the position of any intra-cranial lesion. And he goes on to say that slight in value as is the state of the pupils in cerebral cases, there is probably no symptom which receives more attention from the clinician in his note-taking. It has seemed to me that the oculist and the general practitioner alike could only draw the most misleading inferences from such an avowal. In consequence, I have taken great pains and labor to review a very extensive field of literature both in ophthalmology, and in nervous and mental diseases, in order to confirm or modify my very different conception of the value of a knowledge of abnormal pupillary actions.

In order to appreciate the significance of abnormal mobility of the iris in diseases of the nervous system, it is essential that we should thoroughly understand the anatomical basis for normal pupillary activity, and the appearance of the normal pupil. We should also have a knowledge of the variations of the pupil that are independent of diseases of the brain and spinal cord.

According to Woinow the diameter of the pupil varies, even when the accommodation is at rest, from 2.44 to 5.82 mm., the average diameter being about 4.14 mm. The size of the normal pupil, although determined mostly by the amount of illumination to which it is exposed, varies widely as to its condition of contraction and dilatation, according to the resultant of the many stimuli which react upon it directly or indirectly. In recording the size of the pupil or variations in

1 Read before the Medical Society of the District of Columbia April 6, 1904.

2 Received for publication April 19, 1904.

its diameter, pupillometers should be employed. Randall's modification of Follin's instrument is one of the best practical pupillometers and consists of a scale of circles. It is held close to the eye under observation and rotated until that circle is found which most nearly matches the pupil in size, and the diameter in millimeters then noted. This method of exactly ascertaining the diameter of the pupil under observation is much more useful than such loose statements as "medium-sized pupil" or "pupils dilated," etc.

The size of the pupil is larger in dark eyes than in blue ones; in myopia it is greater than in emmetropia and is more sluggish in response to the various stimuli. There is an associated condition of atrophy of the ciliary muscle. In hypermetropia the pupil is smaller than in emmetropia and acts more eneregtically to stimulation, and there is an accompanying hypertrophy of the muscle of accommodation. Between the twentieth and fortieth years the variations in the size of the normal pupil in the different types of refraction become less pronounced, while after the fortieth year the differences are scarcely appreciable. With advancing years the pupil normally becomes small in size. The small pupil of elderly people is due not only to sclerosis of the walls of the vessels and rigidity of the stroma of the iris, but also to a diminution of the activity of the sympathetic nerve. In the vast majority of cases in normal eyes the pupils are equal not only when both eyes are exposed to light or shaded, but also when one is shaded.

Where there is inequality of the pupils (anisocoria) the more sluggish or immobile pupil is the pathological one. Unequal pupils occur where one eye is blind, or where the character of the refraction in the two eyes is very different, in traumatism, dental caries, in paretic dementia, locomotor ataxia, insular sclerosis, migraine, and in focal disease of the brain.

Bilateral dilatation of the pupils may occur in cases where there is a deficient blood-supply to the brain centers or where there is diminution of blood in the vessels of the iris, as in anemia, syncope, nausea, shock, aortic regurgitation, trance, melancholia, the coma following an epileptic convulsion, and in depressed nervous tone. It occurs in fevers with active delirium; also in typhoid fever. There is a slight dilatation of the pupils at every ordinary inspiration depending on variations of the blood pressure.

Bilateral contraction of the pupil occurs in conditions producing congestion of the iris, as in plethora, typhus fever, mitral insufficiency and other diseases leading to venous congestion, and in pulmonary congestion. At every pulse beat there is a tendency to myosis through systolic filling of the arteries; bilateral contraction also occurs in diminished intra-ocular pressure (*e.g.*, paracentesis corneæ). During forced expiration two factors are at play in affecting the pupil: if the greater factor is the retention of carbon dioxide the pupil will be dilated by stimulation of the pupil-dilating center; if congestion of the head, and therefore of the iris, predominates, there will be contraction of the pupil.

The anatomy at the bottom of a simple involuntary response of the pupil to the direct and indirect light stimulus is as follows: first occur the rods and cones of the neuro-epithelium of the retina, then the bipolar cells, and then the neurons whose cell-bodies constitute the ganglionic layer of the retina. These cell-bodies send out axons which collectively constitute the bulk of the optic nerve; thence in sequence they form the optic chiasma and take part in the formation of both optic tracts. From each tract the pupillary fibers, as distinguished from the visual fibers, proceed through the superior brachium to the superior quadrigeminal body or colliculus of the corresponding side and terminate in arborizations around other cell-bodies located in these structures. The pathway extending from the retina to the superior colliculus on either side constitutes the afferent or centripetal one.

The cell-bodies located in either colliculus send out axons which descend and arborize around the cell-bodies of the oculomotor nucleus in the floor of the Sylvian aqueduct on the corresponding side of the median line. These neurons, extending between the superior colliculus of one side and the oculomotor nucleus of the same side, constitute the association pathway, or Meynert's fibers.

The oculomotor nucleus is highly specialized and differentiated into several nests of cells or subnuclei, such as those for accommodation, for pupil contraction, and for convergence. The axons of the cell-bodies situated in these subnuclei pass along the third nerve and constitute the efferent or centrifugal portion of the reflex arc.

It is through the pupillary fibers of the optic nerve on each side decussating partially and going through both optic tracts that each retina is brought into relation with both oculomotor nuclei, so that the light impinging on one retina can stimulate both pupil-contracting centers and cause both pupils to contract. If the light stimulus is applied to one retina, say the right one, and the right pupil contracts, we obtain the *direct* light reflex, the left pupil contracting under the same circumstances constitutes normally the *indirect* or consensual light reflex.

Another important mechanism by which the consensual light reflex is possible is due to the connection of the two pupil-contracting centers by commissural fibers.

Those efferent fibers destined to control the convergence of the visual axes in binocular vision go directly to the internal rectus muscles. Those that are to control the contraction of the pupil through the sphincter iridis and the accommodation of the eyes for points at varying distances through the ciliary muscles, pass to the ciliary ganglion and arborize around the cell-bodies there located. The axons of these cell bodies thence pass by way of the short ciliary nerves to the sphincter iridis and ciliary muscles.

The centrifugal pathway for reflex dilatation

of the pupil starts at the pupil-dilating center in the fore part of the floor of the Sylvian passage and is probably situated a little external to the oculomotor center. The cell bodies of this center send out axons that pass downward toward the ciliospinal center situated in the lower cervical and upper dorsal part of the spinal cord.

It is probable that a series of related neurons intervene between the pupil-dilating center in the crus cerebri and the pupil-dilating center in the cord, called the ciliospinal center, the last of the series arborizing around the cell-bodies in the ciliospinal center. From this latter center the cell-bodies send out axons that traverse the anterior roots of the first and second thoracic nerves, and their rami communicates, thus reaching the first thoracic ganglion and traveling thence along the cervical sympathetic to the superior cervical ganglion, where they arborize around the cell-bodies contained therein. These cell-bodies send out axons that traverse the cavernous plexus and the ganglion of Gasser (without arborizing in the latter) to reach the ophthalmic division of the fifth nerve and its nasal branch; thence they proceed by way of the long ciliary nerves to the dilator pupillæ. This complicated but well-defined route constitutes the centrifugal pathway for pupil-dilating stimuli.

One of the many centripetal pathways concerned in producing reflex dilatation of the pupil can be illustrated by studying the skin-reflex. If the skin of the neck be pinched, or better, stimulated with a faradic brush, the sensory impulse travels from the nerves of the skin through the posterior roots of the cervical spinal nerves directly, and indirectly by relays of neurons, to the ciliospinal center. The axons of this centripetal pathway that reach the ciliospinal center arborize around the cell-bodies contained therein and start impulses that traverse the centrifugal path, already described, to the dilator pupillæ muscle. Another centripetal pathway is from the cerebral cortex through the corona radiata, internal capsule and crus cerebri to the pupil-dilating center in the floor of the Sylvian passage and thence to the ciliospinal center. This latter is the route taken by the psychic impulses that dilate the pupil, as fear, anger, etc.

The centripetal pathways for dilatation of the pupil are as innumerable as are the pathways for all sensations except those of illumination. In health the reflex contraction of the pupil is invariably accomplished by the light stimulus or the convergence stimulus reacting upon the pupil-contracting center. Every other sensory and psychic stimulus reacts to a greater or less degree upon the pupil-dilating center, tending to stimulate the dilator pupillæ muscle.

The normal medium dilatation of the pupil is dependent mainly upon the presence of stimuli of medium intensity. In a person who is asleep or under complete anesthesia, and in whom therefore the psychic and all other stimuli are at their lowest intensity, the pupils are contracted.

Women, since they are of a more sensitive organization, have larger pupils than men. Nervous, sensitive people, have larger pupils than dull, phlegmatic persons of the same sex.

The reflex contracting and dilating movements of the pupil are altogether involuntary. If both the contracting and dilating mechanisms are stimulated simultaneously the pupil contracts.

But there are movements of the pupil which, though not immediately caused by efferent or afferent stimuli, are indirectly produced through correlation with the voluntary conjugate movements of the eyes from parallelism to convergence, or the reverse, in binocular vision. The centrifugal pathway for voluntary convergence of the visual axes in the horizontal plans starts from the cortical center for convergence, which corresponds with the macular center for convergence, in the middle of the calcarine fissure of the occipital lobe. The cell-bodies located in this region send out axons that traverse the optic radiations to reach the retrolenticular part of the internal capsule and thence proceed through the crus cerebri to the nucleus of the oculomotor nerve, arborizing around the cell-bodies of the convergence nucleus contained therein. There is such an intimate relation, through association fibers, between the single, medianly situated, convergence nucleus in the floor of the Sylvian passage and the accommodation and pupil-contracting centers on each side, that a stimulation of the convergence center effects simultaneously a stimulation of the ciliary and sphincter iridis muscles on both sides. Hence convergence of the visual axes normally causes a contraction of both pupils and constitutes what is known as the convergence stimulus of the pupils; a return of the visual axes to parallelism producing dilatation of the pupil.

While there is only one centrifugal pathway along which an impulse travels from the cortical center for convergence to the corresponding center in the mesencephalon, there are many pathways for afferent or centripetal impulses to reach the cortical center for convergence. If we take into consideration all the sense perceptions, all the associations of ideas, all the activities of memory, imagination, and the emotions, the resultant of which psychic processes constitutes the basis for volition, we may say that the afferent or centripetal pathways for influencing the voluntary movements of convergence and the correlated movements of contraction of the pupil are innumerable and vary immensely in their directness or indirectness and therefore in their complexity. But the principles underlying all these activities are few in number and easily comprehended. For instance, the light stimulus, falling on an excentric portion of the retina (a portion other than the macula lutea) passes along the optic nerve, chiasma, and optic tracts to the lateral geniculate bodies. Here the axons of the visual cell-bodies located in the ganglionic layer of the retina arborize around other cell-bodies located in these lateral geniculate bodies. Axons go out from these cell-bodies along the optic radiation and arborize around cell-bodies located in the corresponding

eccentric portion of the cuneus. Then associating neurons constitute the last relay of neurons in the afferent pathway by which the light stimulus is transmitted to the cortical (macular) convergence center, and cause the eyes to converge to the luminous point, through volition (and also frequently involuntarily). Of course involuntary reflex convergence, and the accompanying myosis, can be induced by stimulation of the convergence center by other afferent pathways.

Another complex afferent pathway is that by which a sound causes voluntary or involuntary movements of the head (and body at times) and convergence of the eyes toward the source or direction of the sound.

In *disease* the dilatation or the contraction of the pupil can be either irritative or paralytic, or both. *Paralytic mydriasis* is produced by an inhibiting disease, either of the pupil-contracting center, or of the fibers that pass along the third nerve to the sphincter iridis; it may also be due to disease of the centripetal pathway between the retina and the oculomotor nucleus. The pupil is moderately dilated, reacting only slightly to myotics, but dilating greatly under mydriatics. If the lesion be located between the pupil-contracting center and the sphincter iridis there can be neither direct nor consensual light reflex. Should the disease lie in the centripetal path between the retina and the pupil-contracting center the pupil can react to convergence and to the consensual light reflex, but not to the direct light stimulus. *Spastic mydriasis* is caused by an irritation of either the pupil-dilating center or the pupil-dilating fibers going to the dilator pupillæ muscle. In this form of mydriasis there is moderate dilatation of the pupil, and it does not dilate further in response to sensory stimuli. Myotics affect the pupil but slightly, while mydriatics dilate it to the maximum. The pupil contracts only moderately to the convergence and light stimuli.

While either form of mydriasis occurring separately evokes only moderate dilatation, the two occurring in conjunction would develop a maximum dilatation. *Paralytic myosis* is due to an inhibiting lesion of the pupil-dilating center in the mesencephalon or spinal cord or of the pupil-dilating fibers.

In this myosis the contraction is slight and the pupil is little affected by mydriatics, while myotics have a maximum effect. *Spastic myosis* is caused by an irritation of the pupil-contracting center or of the pupil-contracting fibers. The pupil is moderately contracted and reacts very slightly to reflex stimuli; but it is very responsive to myotics and mydriatics, these drugs effecting contraction and dilatation *ad maximum*. While in either paralytic or spastic myosis occurring separately the contraction is moderate, the two in conjunction would develop a contraction *ad maximum*.

A disease of the pupil-dilating center or its centrifugal fibers will induce either spastic mydriasis or paralytic myosis according to whether the lesion is in its early and stimulating stage, or whether it has advanced to its late and inhibiting phase. For instance, the early stages of diseases of the spinal cord in the cervical region will develop spastic mydriasis, as spinal hyperemia, meningitis, myelitis, and neoplasms: this spastic mydriasis is also caused by the pressure of enlarged lymphatic glands on the cervical portion of the sympathetic nerve, also by an aneurism of the arch of the aorta, or of the brachio-cephalic or common-carotid arteries. The later inhibiting stages of all these lesions would induce paralytic myosis. Traumatism of the cervical portion of the cord or sympathetic nerve would cause paralytic myosis. The toxin of locomotor ataxia frequently develops an early spastic mydriasis and a later paralytic (so-called spinal) myosis. This type of myosis is also an important symptom in the paralytic pseudo-dementia of syphilitic origin, and in paralytic dementia. It occurs also in insular sclerosis, in some forms of multiple neuritis, and in bulbar palsy when complicated with progressive muscular atrophy. The amblyopia of chronic alcoholism is frequently accompanied by paralytic myosis due to fatty degeneration in the medulla oblongata.

The value of a knowledge of pupillary abnormalities is well shown in the case of paralytic myosis. The small pupil in this condition is usually associated with retraction of the ball of the eye into the orbit and narrowing of the palpebral fissure and is most frequently observed in aneurism of the thoracic aorta or other mediastinal tumor; in chronic inflammations of the cervical portion of the cord; and in locomotor ataxia. In these cases a general inspection of the body will often enable the physician to make a diagnosis instantly. If the lesion be an aneurism some pulsation of the upper part of the chest would be observed; in diseases of the cervical cord, muscular atrophy of the upper limbs would be noticed and the position of the hands and the spastic attitude of the feet would be conspicuous; while in locomotor ataxia all the signs mentioned above would be lacking and both pupils would be small and inactive to light.

Spastic mydriasis also occurs in irritation of the sensory nerves of the intestines by worms or intestinal tumors: in the spinal irritation of people suffering with anemia after severe illness; in acute mania and melancholia; in paralytic dementia when it is often associated with paralytic myosis in the other eye, and in hunger. While mydriasis in spinal diseases indicates an irritative process, in cerebral lesions it points to an extensive inhibiting disease of the brain. Diseases of the pupil-contracting center, or its efferent fibers in the third cranial nerve, will cause either spastic myosis or paralytic mydriasis, according to the irritating or depressing nature of the lesion. Spastic or irritative myosis is symptomatic of early stages of inflammatory diseases of the brain and its meninges; it is present in the early stages of epileptic and hysterical attacks; in the early stages of intracranial tumors involving the third nerve. If, during the course of tuberculous, simple or cerebro-

spinal meningitis, or other inflammatory affections of the brain, mydriasis replaces the medium myosis the prognosis becomes graver. It points to paralysis of the third nerve and indicates the stage of depression. Spastic myosis occurs in engravers and watchmakers in consequence of the protracted stimulation of the convergence and accommodation centers; also in those having tobacco amblyopia due to the excessive stimulation of the myotic center by the nicotine.

In apoplexy due to hemorrhage there is at first spastic myosis (or the pupils may be unequal) and the light reflex is lost, whereas in thrombosis and embolism the pupils are not myotic and they react to light and are equal. When spastic myosis occurs in abscess of the brain the myosis is at first on the same side as the lesion. Spastic myosis occurs when the cerebellum is invaded by small hemorrhages; also as a reflex action in many diseases of the eye involving irritation of the trifacial nerve; and in pressure on the pons. The lesion of the pons in which bilateral myosis is most frequently observed is hemorrhage into this structure. When a patient is in profound coma and has great contraction of the pupils,—opium poisoning being excluded,—a hemorrhage into the pons varolii should always be suspected. Occasionally the double myosis is noted in meningeal hemorrhages that occur through the corpus stratium into the lateral ventricle. Frequently, in pontine apoplexy, the pupils, instead of being contracted, are normal. The collateral or accompanying symptoms are required to locate and define the nature of the lesion.

Paralytic mydriasis is caused by diseases of the orbit and intra-ocular growths that produce pressure upon the ciliary nerves; in glaucoma for the same reason (although cloudiness of the media and diminution of illumination also encourages the mydriasis); in lesions of the brain causing increased intracranial pressure, such as hemorrhage, tumors, and large abscesses; in hemorrhage into the crus cerebri or the centrum ovale; in cerebral softening; and in acute dementia with edema of the cortex. In the late stages of paralytic dementia irritative myosis gives place to paralytic mydriasis. When first one eye and then the other is affected by transient mydriasis the symptom is to be regarded as a prodrome of insanity. Optic atrophy, by preventing the conduction of the light stimulus, induces paralytic mydriasis, but does not prevent reflex contraction of the pupil in response to the convergence stimulus.

Another anomaly of the pupil is hippus. *Hippus* may be defined as a normal clonic rhythmical spasm of the sphincter iridis. With a given fixation and illumination there is a rhythmical dilation and contraction of the pupil. Even when the pupil seems perfectly quiet its inspection with the corneal microscope will reveal that there are minute and irregular variations in its size that are perpetually taking place in response to the ever-changing psychic and sensory impulses that are playing upon the pupil-dilating center. This minute hippus has been aptly designated the "unrest of the pupil." Hippus, when pathological, is usually associated with nystagmus. The latter symptom is a clonic rhythmical spasm of the muscles concerned in producing conjugate lateral and other movements of the eyes. Both abnormal hippus and nystagmus are very important symptoms in the diagnosis of insular sclerosis. Abnormal or exaggerated hippus occurs in mania and other psychical disturbances; in hysteria, epilepsy and meningitis; it is not only comparatively frequent in insular sclerosis but it also, in two recorded cases, was the only brain symptom noted.

As nuclear palsy of the convergence center in the floor of the Sylvian passage is relatively frequent in this sclerosis the pupillary symptoms pertaining to that palsy are often noted. In neurasthenia and in cases of secondary spasms and tremor following attacks of apoplexy, there is a very noticeable increase in the oscillations of the puplis. Through irritation of the first thoracic ganglion by tuberculous glands a transient, rapid, and unsymmetrical dilation of the pupils may be observed in a considerable number of cases of tuberculosis. Buzzard taught that of all the organic diseases of the nervous system, insular sclerosis in its early stages is most commonly mistaken for hysteria. Since a series of rapid contractions and dilations of the pupil on sudden exposure to light occurs in both of these diseases, the associated symptoms of the hippus are necessary to differentiate the diseases, particularly the associated eye-symptom known as nystagmus that occurs in the sclerosis.

When a pupil reacts slowly to light it indicates that chronic degenerative changes are taking place in the nervous system. *Basal lesions* of the third nerve are common factors in producing pupillary disturbances,—usually paralytic mydriasis. The most common cause is the gummatous exudate of syphilis. In basal lesions there is very generally an involvement of several nerves without reference to symmetry, and this fact constitutes the chief diagnostic feature of these lesions. A crossed paralysis of the third nerve due to basal lesions cannot always be distinguished from that induced by pontine disease. Usually in the former the symptoms appear gradually and in sequence; in the latter simultaneously and suddenly.

Swanzy believes that an indolent and chronic form of meningitis due to rheumatism, even when no other signs of rheumatism are present, is often a cause of basal paralysis of the third nerve. There may be immobility of the pupil, coming and going from day to day. In the investigation of basal lesions it is well to remember that tumors of the frontal lobe of the cerebrum tend to grow toward the base of the brain and there directly involve the cranial nerves. Also basal paralysis occurs as a distant or pressure symptom of tumors of the cerebellum and cerebral hemispheres.

A neoplasm occupying the cavernous sinus, a rupture of the cavernous artery in the cavernous sinus, an aneurism of the cavernous artery or of the intracranial portion of the ophthalmic artery,

and thrombosis of the cavernous sinus, may all involve the third nerve, either by direct pressure or indirectly by pressure of the distended ophthalmic vein. Hence, in these affections pupillary symptoms may be prominent. According to the amount of irritation or depression of the third nerve, there would be irritative myosis or paralytic mydriasis.

Fascicular or crossed paralysis of the third nerve is another important condition causing abnormal pupillary phenomena. Since the superior peduncle of the cerebellum, like the third nerve, is intimately related to the red nucleus in the tegmentum, vertigo is a common symptom in fascicular paralysis of the third nerve.

Nuclear disease of the oculomotor nerve is a common cause of symmetrical mydriasis and may be developed by many causes. It may complicate bulbar paralysis, progressive muscular atrophy, paralytic dementia, insular sclerosis, locomotor ataxia, multiple neuritis, exophthalmic goiter, and occurs as a sequel of diphtheria, grip, diabetes, and purpura; it follows injuries to the head unaccompanied, as well as accompanied, by fracture. The most common causes of primary cases of this disease are alcoholism and syphilis. Other causes are poisoning by carbonic oxide, nicotine, ptomains, sulphuric acid, lead, and exposure to cold, also congenital predisposition, where it occurs in young children. According to Swanzy, chronic alcoholism is the factor in developing what he calls sudden or peracute nuclear ocular palsy. Paralysis of the power of convergence due to nuclear disease of the convergence center in the floor of the Sylvian aqueduct gives well-defined pupillary symptoms. In this affection the power to fix both visual axes upon the same point is lost, while the eyes separately or together can move to either side. In other words the nucleus of the sixth nerve on either side can be stimulated and evoke conjugate lateral motions and each internal rectus can respond to a stimulus from its own special nucleus. In this focal disease of the brain the light reflex is intact, and the pupil is not dilated, but the reflex contraction of the pupil does not occur on attempting to converge the eyes,—the convergence stimulus is abolished. A greater or less impairment of accommodation is a concomitant of these conditions. This nuclear paralysis must be carefully distinguished from the impairment of convergence that is common in exophthalmic goiter and which is due to mechanical causes; and also from insufficiency of the internal recti that may be associated with myopia. Berry records a case of spasm of convergence due to hysteria. Although he does not mention it, I presume the condition was accompanied by irritative myosis.

Thrombosis of one cavernous sinus may spread through the circular sinus to the opposite cavernous sinus, causing total immobility first of one eyeball and then the other. This condition would be differentiated from nuclear ophthalmoplegia by the presence of edema of the lids and chemosis, optic neuritis, exophthalmos, pain, and finally loss of sensation. In addition to these local symptom, there would be chills, fever, etc. The symptoms diagnostic of nuclear palsy of the ocular muscles are their bilateral and often symmetrical occurrence, and also the fact that commonly either the intrinsic or the extrinsic muscles alone are paralyzed, also the frequent immunity of the levator palpebræ.

Tumors of the pineal gland and other tumors in the region of the quadrigeminal bodies by compressing the nuclei in the floor of the aqueduct of Sylvius furnish an important localizing distant symptom because impairment of the muscles of the eye very similar to those of nuclear ocular palsy (ophthalmoplegia) will be present. This ocular palsy is commonly associated with cerebral ataxia. A tumor of the median region of the cerebellum, as the vermis, has engendered the same group of symptoms. Pupillary disturbance is a frequent concomitant of the other eye symptoms.

Wernicke's Pupil Symptom.—A lesion of the visual path between the optic chiasma and the cortical center for vision will cause the symptom known as homonymous hemianopsia. The presence of Wernicke's pupil-symptom is diagnostic in enabling us to locate the lesion in the optic tract. This symptom is difficult to evoke. The attempt to produce it should be made in a dark room with the aid of an assistant. The source of illumination can be a gas jet of moderate brightness and should be situated behind the patient, and the latter directed to look into the distance. The pupil should then be moderately illuminated by the assistant reflecting light into it with a plane ophthalmoscopic mirror while the examiner directs from the concave mirror of his ophthalmoscope a narrow beam of light upon different portions of the retina. If the light is reflected upon the hemiopic portion of the retina to the exclusion of the remaining portion, either there will be no light-reflex of the pupil or, which is more usual, the pupillary response will be much more sluggish than when the light is reflected upon the normal half of the retina. The lack of promptness of the pupillary reaction, rather than its entire absence, in the test for hemiopia, is due to the fact that it is impossible to prevent some of the light from reaching the normal side of the retina. The pupillary movements may be quite delicate in this test, and therefore the pupil should be very carefully observed.

A simpler and much more accurate test, and one that can be applied without the aid of an assistant is to use the instrument devised by Von Fragstein and Kempner instead of the concave mirror for sending a very small beam of light upon various parts of the retina.

Great care should be exercised in throwing the beam of light into the eye so as to be sure that its angle of incidence as well as its intensity shall be as nearly as possible the same on each side of the retina. This is important because a variation in the angle of incidence of the beam of light sent through the pupil of a perfectly normal eye on

one side and then on the other will cause a decided difference in the rapidity and promptness of the pupil reflex. It should be borne in mind that occasionally in the same patient Wernicke's pupil-symptom may be present at one observation and then on a subsequent day be absent. This is to be explained by the presumption that the pupillary nerves in the optic tract are damaged but not destroyed, so that they may be more responsive to stimuli on some days than on others. Again in lesions of the optic tract hemianopsia may be present while Wernicke's pupil-symptom is altogether absent, owing probably to the greater vulnerability of the visual nerves than the pupillary ones.

Wernicke reports a case of brachial monoplegia, associated with homonymous hemianopsia which resulted from a stab in the head. The detection of his pupil-symptom (the hemianopic pupillary inactivity) led him to make the correct diagnosis of injury of the optic tract and of the closely related crus cerebri. Henschen reported observations on a patient who presented fleeting conditions of hemianopsia and Wernicke's pupil-symptom. The lesion was a tumor of the dura mater pressing against the brain in the region of the fissure of Sylvius, and evoking the symptoms by disturbance of the blood-circulation.

A case published by Leydon shows that tumors of the lenticular nucleus, the optic thalamus, crus cerebri, and the temporal lobe of the cerebrum may encroach upon the optic tract and cause homonymous hemianopsia and the hemiopic pupil. In this case of Leyden's there were left hemianopsia and Wernicke's pupil-symptom, associated with left hemiplegia, left ptosis and facial paralysis, and finally, conjugate deviation of the eyes to the right. The last symptom indicated a lesion in the right cerebral hemisphere, while all of the other symptoms, collectively, suggested a lesion of the right crus cerebri and optic tract. At the autopsy a tumor was found that involved the crus cerebri, optic tract and lenticular nucleus on the right side of the brain.

Syphilitic meningitis and gummata, and tubercles are the most frequent lesions of the optic tract. Hemorrhages and softening are uncommon.

There are no pupillary symptoms that enable us to differentiate between the hemianopsia due to lesion of the optic radiations and that due to disease of the cortical visual centers. While the association of Wernicke's symptom with homonymous hemianopsia would indicate a lesion of the optic tract, its conjunction with bitemporal hemianopsia would indicate a disease of the middle segment of the chiasma involving the decussating fibers. If the hemianopsia were unilateral, and not dependent on disease of the retina, it would suggest an injury to one optic nerve. The hemianopic pupil is a rare symptom in infantile paralysis. In hydrocephalus, owing to the pressure by the floor of the distended third ventricle on the optic chiasma, there is great liability to bitemporal hemianopsia and the hemiopic pupil. It is because of the great difficulty in eliciting Wernicke's symptom that it was so long overlooked. It was not observed until several years after it was announced by Wernicke as one that should, on theoretical grounds, be capable of detection.

Pupillary symptoms in *epilepsy* are quite important at certain times. During an epileptic seizure the pupils are quite variable. Usually at the commencement of the attack there is spasmodic myosis, or the pupils are normal but they undergo paralytic mydriasis during the phase of tonic spasm and so continue until the return of consciousness. The convulsions of meningo-encephalitis are associated on the other hand with a contracted pupil. The fact that the light-reflex is retained during a hysterical convulsion but is lost during an epileptic spasm is of value in differentiating one form of convulsion from the other. Another important aid in distinguishing a true epileptic convulsion from that of hysteria or of a malingerer is the presence in the former of hippus or rapid alterations of the pupillary diameter.

In *locomotor ataxia* the pupil may be normal or even dilated, but commonly it is contracted. Frequently the contraction is so extreme as to constitute the condition known as "pin-hole" pupil,—a state due, not to irritative myosis, but to a secondary contracture of the sphincter iridis due to paralysis of the dilator pupillæ. The abnormal condition of the iris may be due to a lesion, either of the brain or the spinal cord. In the former case the seat of the disease is in the pupil-dilating center of the floor of the aqueduct of Sylvius. In the latter case the lesion is located in the upper dorsal and the lower cervical portion of the cord. In either instance the myosis of pupil is of the paralytic type. In those cases, usually early, of locomotor ataxia in which Meynert's fibers are not involved, there is only a medium myosis and the pupil reacts to the light reflex as well as to convergence; but later in the disease when the fibers of Mynert are involved, the pupil, while responding to the convergence stimulus, does not do so to light or, at least, only very slightly. This constitutes the very valuable clinical symptom known as the Argyll-Robertson pupil. If Meynert's fibers are uninvolved the pupil reacts to light as well as to convergence, even when it exhibits the extreme myosis known as the "pin-hole" pupil. In testing for the presence of the Argyll-Robertson pupil care must be exercised not to confuse unilateral reflex blindness with unilateral reflex iridoplegia, for in both cases there is absence of direct light reflex on the diseased side, but response to the convergence stimulus. In the former case there is a lesion in the centripetal pupil-contracting fibers either in the retina, optic nerve, optic tract, or superior brachium. In the unilateral iridoplegia the lesion is in the sphincter iridis subnucleus of the oculomotor nucleus.

The Argyll-Robertson pupil occurs not only in locomotor ataxia, but also in paralytic dementia, atrophy or softening of the brain, insular sclerosis, in tumors of the basal ganglia adjacent to the third ventricle, in hydrocephalus, syphilis of the

brain, and as a congenital defect. If there should be a response of the pupil to the direct light stimulus, but not to the convergence stimulus, we would have the reverse of the Argyll-Robertson pupil, indicating a lesion of a particular part of the oculomotor nucleus. In a considerable number of the cases an eliptical pupil has been noted with the long axis in the vertical meridian. Both in the late and the early stages, in many cases, the pupils present inequalities of size.

The commonly accepted theory of the Argyll-Robertson pupil is as follows: it is a lesion of Meynert's fibers, that is, of the fibers extending from the superior quadrigeminal bodies to the nuclei of the third nerves in the floor of the Sylvian aqueduct. This explanation is sufficient in the vast majority of cases of locomotor ataxia because the Argyll-Robertson symptom is most frequently binocular. But in those cases where the symptom is monocular the current explanation is inadequate. It can be readily understood that if only the fibers of Meynert on one side be diseased, the others being normal, that the direct light-reflex may be elicited on the normal side and the indirect or consensual light-reflex may be developed through the internuclear fibers that connect the nucleus of the sphincter iridis of one side with that of the other. In consequence of these facts Bevan Lewis, Heddæus and Jessop teach that the Argyll-Robertson pupil is a nuclear disease, that is a disease of the nucleus of the sphincter iridis nerve. Heddæus believed that there is no direct communcation between the nucleus of the sphincter iridis nerve and that of the ciliary muscle nerve, and that the branch of the third nerve going to the ciliary muscle and the sphincter iridis, contains two independent roots, one from the nucleus of accommodation and the other from the nucleus of the sphincter iridis muscle, so that the disease causing loss of the direct light-reflex could be fascicular as well as nuclear, for destruction of the nerve-root springing from the sphincter iridis nucleus would give loss to the pupil reflex from direct light as well as destruction of the sphincter iridis nucleus itself. Yet Swanzy points out that this theory is not tenable because myosis is a very frequent accompaniment of the Argyll-Robertson symptom. If the view of Heddæus were true the sphincter iridis would always be paralyzed in these cases and the unopposed dilator pupillæ, under the tonic influence of the sympathetic, would always dilate the pupil, thus giving mydriasis as the uniform symptom accompanying the Argyll-Robertson pupil, whereas myosis is the common symptom. In view of all the facts of the case Swanzy makes the observation, which is fully justified in my opinion, that there is much to be learned before an entirely satisfactory explanation of the occurrence of this valuable clinical symptom can be given. Peripheral neuritis is liable to be occasionally mistaken for locomotor ataxia, but the presence of the Argyll-Robertson pupil would readily exclude the former.

Pupillary Symptoms in Insanity.—Anomalies of the pupil are very frequent in the prodromal stages of mental diseases and are therefore of great clinical value. They may, in various cases, consist of irregularity of the shape of the pupils, inequality of the size, loss of the indirect or consensual reflex and of the direct light reflex, the presence of the Argyll-Robertson pupil, of mydriasis or myosis, the absence of the skin reflex, and the paradoxical pupil symptom. In acute curable dementia, or what Berkeley calls "states of mental stupor" the pupils are commonly dilated and react only slowly to convergence, to light, and to skin stimuli. In syphilitic insanity mydriasis and irregularities of the pupils are more usual than contraction. The various psychoses of old age manifest irregularities of the pupils, and present pupils that react slowly to convergence, skin or light reflexes. That organic lesions are present in both acute and chronic alcoholic insanities is evidenced not alone by the presence of tremor and occasional paresis of the facial nerve, but also by unequal or myotic pupils. While pupillary inequalities are quite common in the alcoholic insanities, the tardy reaction of the pupil to convergence and light is much less common than in paralytic dementia. In paranoia abnormalities of iris movement are infrequent, having been observed in about only one per cent. of the cases. And in this connection it is interesting to note that a number of cases of chronic progressive paranoia ultimately develop into paralytic dementia.

Pupillary Symptoms in Paralytic Dementia.—The most common condition of the pupil in this grave disease is marked contraction of the sphincter iridis due to paralysis of the dilator pupillæ through disease of the sympathetic nerve. In this condition the pupils are extremely small and do not expand when the eye is shaded, and they are uninfluenced by exposure to light. Sometimes, in the early stages, when so-called iridoplegia is commencing, the pupil is responsive to a beam of light concentrated upon it by focal illumination; but even then the mobility of the iris is quite limited in extent and presents the hippus or oscillatory movement with a tendency even to wide dilatation.

This dilatation under focal illumination constitutes the paradoxical pupil symptom. This paralytic myosis has sometimes been present for ten years before the complete development of the disease. Paralytic myosis, and therefore, reflex immobility of one pupil alone, is seldom permanently noted since the other soon becomes involved. In eliciting the symptom of reflex immobility, the convergence and therefore the accommodation reaction should be carefully eliminated. The examiner must also take the precaution to ascertain that the patient's eye is not immobile in consequence of the rigidity of sclerosis, or of atrophy of the iris, posterior synechiæ due to a mild or transient iritis, or a myotic drug, etc.

The pupillary symptom next in importance to paralytic myosis is the absence of the indirect or consensual light reaction. The consensual reflex is elicited as follows: both eyes are shaded with-

out touching the skin around either orbit, so as to avoid the liability of introducing the complicating sympathetic or skin-reflex of the pupil. Then one eye, say the left one, is suddenly uncovered when the right pupil will undergo a contraction with following wavy dilatation. Berkeley states that he has observed this consensual wavy dilatation of the pupil before the loss of the light reflex, and its appearance in conjunction with mental phenomena has always led him to make a provisional diagnosis of paralytic dementia.

Another pupillary symptom of much importance in general paresis is the absence of the skin-reflex. Bevan Lewis found that this reflex was present in only about 11 per cent. of his cases, whereas it was entirely absent in about 67 per cent. Associated with the pin-hole pupil in this disease is loss of the power of accommodation, especially in the later stages of the paresis. Rarely, in consequence of optic atrophy or other grave defect of vision, one or both pupils may be widely dilated. Gudden states that a little under five per cent. of his cases of paresis exhibited double mydriasis. In the early stages of paresis the ophthalmoscope will reveal that the fundus of each eye is normal. Swanzy states that in consequence of a number of cases that have come under his observation he has been led to think that the full value of the Argyll-Robertson pupil in relation to nervous diseases has not yet been fully appreciated. Dr. Branwell states that in the vast majority of instances in which he has observed the Argyll-Robertson pupil it has been associated either with locomotor ataxia or paralytic dementia.

Gowers has expressed the opinion that this pupillary symptom proves that a degenerative process is at work in the nervous system which raises a strong presumption that the process is of syphilitic origin. We know that the two most potent causes of locomotor ataxia are heredity and syphilis. We also know that these two etiological factors are by far the most frequent ones in paralytic dementia. While the majority of physicians look upon locomotor ataxia and paralytic dementia as having nothing in common, it seems to me that the facts related above and many others, justify the German and French physicians in regarding the two diseases as fundamentally alike, in spite of the fact that in tabes the spinal symptoms are quite constant, whereas in dementia paralytica they are of an ever shifting character. It has been observed that while there is a diminution in the intensity of the oscillations of the pupil (hippus) in locomotor ataxia, their rhythm is unchanged, in paralytic dementia the rhythm is lost. Yet in spite of these differences dementia paralytica has been called the half-brother of locomotor ataxia.

It should be borne in mind that paralytic dementia and *neurasthenia* have a large number of similar and misleading symptoms. In each heredity is important, and they belong especially to the middle period of life. In each a syphilitic history is very prominent, and sexual, alcoholic, and mental excesses are noted. Insomnia, headache, vertigo, irritability, indigestion, and inability to concentrate the mind are prominent symptoms.

A number of cases that have been diagnosed and treated as neurasthenia have ultimately turned out to be cases of paralytic dementia. In differentiating these two diseases the pupillary symptoms are of the utmost importance. In the eye, mental, and nerve clinic of the Charité in Bonn, Thompson found that of those patients who developed paralytic dementia or locomotor ataxia, 90 per cent. had reflex immobility of the pupil to light. Berkeley states that many of these patients went to the various clinics under the impression that they had neurasthenia, and he admonishes the physician to think twice before contenting himself with a diagnosis of neurasthenia in a man or woman who in middle life shows well defined reflex pupillary disturbances, for the prognosis of insanity is ominous. It would be extremely difficult to differentiate paralytic dementia from certain forms of chronic alcoholism were it not for the help of eye-symptoms. In both of these diseases along with the lowered intelligence, defects of speech and writing are noted, as also anomalies of sensation, tremors, and epileptiform seizures. Also in those patients who have peripheral neuritis the patellar reflex is abolished. But the presence of paralytic myosis or contraction of the pupil and other eye symptoms would point strongly to the presence of paralytic dementia. The prognosis in paralytic dementia is altogether bad. Even those cases which apparently recover for a time and are able to return to business for a year or two, show the lurking presence of the disease by the inactivity of the pupil, associated with slight tremors of the hands, and the abolished or increased knee-jerk.

Occasionally there is inequality of the pupils in encephalopathia saturnia; also at times in Morvan's disease or syringomyelia.

In Parkinson's disease of paralysis agitans the pupils are normal, the myosis that is noted being common in healthy elderly people.

In Landry's disease or acute ascending paralysis, although eye-symptoms are rare, there has been observed either a loss of the light reflex or a dilated pupil. In myotonia congenita or Thomsen's disease, and also in hereditary ataxia or Friedreich's disease, no pupillary symptoms have been observed.

A knowledge of the different phases of mobility of the iris in chloroform narcosis is of the utmost practical importance, and affords a brief but very instructive review, of the philosophy of pupillary changes. In the excitation stage of chloroform anesthesia the drug first dilates the pupil by stimulating the pupil-dilating center, thus inducing spastic mydriasis, then later the center is depressed, and still later, as the chloroform narcosis becomes more pronounced the pupil-dilating center is completely inhibited, so that wide dilatation gives place to medium contraction, through unopposed tonic activity of the oculomotor nucleus

and we have paralytic myosis. The narcosis becoming more pronounced the pupil-contracting center is stimulated and produces the "pin-hole" pupil or spastic myosis. As the patient is carried into the condition of profound surgical anesthesia there is a slight dilatation of the pupil due to commencing inhibition of the pupil-contracting center in the gray floor of the Sylvian passage. Should a marked dilatation of the pupil now occur, especially a sudden one, it is a danger signal and indicates that inhibition of the pupil-contracting center has been superseded by paralysis of this center, and admonishes us that the life of the patient is in grave jeopardy (paralytic mydriasis).

MEDICAL PROGRESS.

SURGERY.

Removal of the Semicircular Canals.—The excision of this portion of the ear for the treatment of unilateral aural vertigo is an operation attended by considerable risk, but capable of affording very great relief in certain chosen cases. Richard Lake (*Lancet,* June 4, 1904), cites the history of a woman, twenty-one years of age, who had suffered from aural vertigo complicated with vomiting for five years. Deafness and tinnitus were both gradually but certainly increasing. The use of suitable glasses made no difference whatsoever in the frequency of her attacks. She experienced no constant dread of falling in any particular direction. She had been given almost every conceivable drug for the relief of the condition, among others, hypodermic injections of pilocarpine, having been used to their full limit. An ordinary mastoid operation was first performed with the exception that the innermost portion of the posterior wall was not removed. The temporal opening being advanced forward, upward and backward The malleus and incus were removed, after which the upper and outer surfaces of the external semicircular canal were exposed. The superior canal was then brought into view and removed with a medium-sized burr. The posterior canal was then burred away entirely. The shock from this operation was very profound. For forty-eight hours the patient lay coiled up on the right side in the position commonly ascribed to patients suffering with cerebral irritation. The eyes were tightly closed, but the balls moved erratically. On the seventh day she sat up. On the tenth day she was able to take a few steps and in two weeks she could easily walk twenty yards. She could turn only toward the sound side. If she attempted to turn to the operated side she fell toward the sound. At the end of four weeks she was able to do everything without fear of falling. Since the fourth day there have been no movements of the eyes, abnormal in character. For the past three months there has been no return of the vertigo, and this may be looked upon as a great achievement, inasmuch as the patient was entirely incapacitated by her disease. It appears justifiable from the history of this case to believe that there are many which would respond to similar treatment in a similar gratifying manner, the important point being the question of indication for operation. The question for interference with the hearing is not a deterrent, because these patients apparently are not made much worse by operation, and, indeed, if they were, the relief would justify the entire destruction of the organ of hearing on one side. The operation itself is not difficult except when made so by anatomical anomalies and irregularities. Probably it is impossible to avoid entirely the evidences of cerebral irritation and the eye symptoms, although in the author's case it is believed that the use of Lister's strong solution was in part responsible for the phenomena described. He recommends, therefore, that when this operation is done, a mild antiseptic wash should be used, because it has been shown that chemical irritation of the parts produces more reaction than actual section.

Disinfection of the Skin.—Animated by the idea that the source of infection in operative wounds was to be found in the patient's skin as often as in the surgeon's hands, E. W. Siekemeier (*Archiv. f. klin. Chir.,* Vol. 73, No. 1) has made a series of experiments with this in mind. He recommends as the result of these observations that the patient be cleaned outside of the operating room and an abundance of flowing water be used. He found that after fifteen minutes of cleaning a large number of bacteria would be left on the skin, unless a brush were used. After the use of the latter a marked diminution in the number of bacteria was found. Tincture of green soap is a most valuable adjunct, but can be rendered much more effective if employed after one or more washings with ordinary soap.

Experimental Studies on Entero-anastomosis.—As the result of experiments made in the higher animals, T. Sato (*Archiv. f. klin. Chir.,* Vol. 73, No. 1) has found that if two sections of small intestine, or stomach and intestine, be held in apposition, with the outer layers removed so that the mucous surfaces are exposed, no communication between the lumena of the two will result, unless some destruction has taken place. The resistance of the mucosa is of such a high grade, that a mere exposure of a considerable segment, or the approximation of two such, never leads to perforation. In addition to producing apposition it is necessary to reduce the nutrition of the mucosa by chemical or thermic irritants, and thus to bring about a necrosis. For this purpose the author prefers the nitrate of silver stick to the actual cautery.

Modified Method of Stitching in Bassini's Operation.—It is well known that one of the most objectionable features attending this operation is the possibility of stitch infection in the lower tier of stitches. Robert Porges (*Zentralbl. f. Chirurgie,* May 28, 1904) states that while the usual period of convalescence from a non-infected operation may be conservatively placed at three weeks, the period is lengthened to from six to fourteen weeks if the sequel under consideration subvenes. He states that not only in his work, but in the work of some of the ablest operators in Vienna and other parts of Europe, so much attention has been bestowed upon this subject that he has developed a method of placing the deep stitches so that if infection occurs in them, immediate drainage may be had in a more convenient manner than as they are at present inserted. The operation is done exactly as Bassini does it until the beginning of the deep sutures, which unite the internal oblique to Poupart's ligament. These are inserted, but are not tied in the usual way, being made fast to a fine piece of silk, which is carried out through the wound together with the terminations of the deep stitch. The superficial suture is put in, in the form of a figure of eight, so as to include the external oblique and the skin. The article is well illustrated so that the method of introducing the stitches is easily understood. All the deep stitches, when applied after this method, lead to the outside, an obvious advantage in cases of infection. When the wound is closed, the figure-of-eight stitches appear at intervals, while the deep stitches are brought out through the wound, held by artery forceps. When it is desired to remove the stitches, these are opened and the fine silk, which was previously mentioned as being

brought to the surface, with the terminations of the deep stitches, is used as tractors. The author states that this method can be pursued without any considerable loss of time and that he has found it satisfactory in every detail.

Crepitus from the Scapula.—This interesting condition has been alluded to by few writers, and the case reported by AXMANN (*Deut. med. Woch.*, June 23, 1904) is therefore worthy of attention. His patient was a boy of eighteen in whom a loud crepitus gradually developed in the right shoulder, although the boy was otherwise in good health and had sustained no injury. On lifting the arm, the crackling sound could be heard for several yards. Nothing was heard on passive motion and muscular effort seemed necessary in order to elicit the noise. The X-rays failed to show any abnormalities. No symptoms were complained of. In Kuttner's report, 22 cases of this condition are mentioned, and the following are stated as etiological factors: Bony deformities in the scapula or thorax which are the result of tuberculosis or syphilis; ankylosis in the shoulder joint; paralysis with muscular atrophy; and abnormal diverticulae from the synovial membrane. In this case, however, none of these lesions could be demonstrated.

Determination of Renal Capability.—It is of prime importance that a careful examination of both kidneys be made before attempting a radical operation on one. J. W. CHURCHMAN (*Maryland Med. Jour.*, July, 1904) says the usual methods of urinary analyses, actinography and cystoscopy as well as subsequent exploration of the healthy kidney may give no clue as to changes in kidney tissue which might impair the working capacity of the organ. The usual urea tests are inaccurate for more than the urea is measured, but the great difficulty of accurate tests renders them useless clinically. Inferences regarding normal or subnormal functional capacity of the kidneys are not warranted from a single observation, since wide daily variations may occur in kidneys doing physiological work. Routine urea tests even when continued over relatively long periods are not precise since maintenance of nitrogen equilibrium does not necessarily speak against nitrogen retention, likewise a deficiency in nitrogen output does not of necessity mean retention of toxic products. The ordinary tests, however, should not be disregarded, as they have the clue-giving value of all rough methods. It is suggested that some substance be injected into the organism, easy of detection in the urine, and that the renal capacity be judged from the manner in which such a substance is excreted. Two such methods are described. The technic of the first consists in the subcutaneous injection of 5 m.g. of a solution composed of equal parts of phloridzin and sodium carbonate, the bladder having previously been emptied. In normal cases sugar appears in the urine in a half hour, the quantity being about 3 per cent. In general, disease is indicated by (1) absence of sugar after a reasonable interval; (2) delay in its appearance; (3) a small percentage of sugar. In the second method one c.c. of a sterile 1-20 solution of methyl blue is injected deeply into the buttocks, after emptying the bladder. The urine collected every half hour until the blue appears and then every half hour until it disappears. Normally the blue appears in the first hour and disappears in 36 to 48 hours. The time of appearance, intensity, duration and course (cyclic, polycyclic or intermittent) of elimination must be considered before a conclusion can be reached. By determining the freezing point of urine and comparing it with that of blood (cryoscopy), the molecular content of the urine may be estimated and an index of osmotic pressure given. A test tube containing the urine, a finely-graded thermometer and a stirring wire, is suspended in a freezing mixture. When the liquid freezes the latent heat given off causes a sudden rise of mercury, the freezing point is determined by the point from which the mercury rises. Urine normally freezes between -0.9° and -2°, that from healthy kidneys has a lower freezing point than that of diseased kidneys. Blood freezes normally at 0.56°, a lower freezing point means renal insufficiency. The practicable methods of determining renal capability are not accurate, but the accurate methods are as a rule not practicable. Of the methods comparatively simple in technic cryoscopy is recommended as giving best results, its chief advantage being that it gives an index of total waste products instead of that of a single constituent.

MEDICINE.

Pseudo-ascites After Chronic Enteritis.—L. TOBLER (*Deut. Arch. f. klin. Med.*, Vol. 80, Nos. 3 and 4) has noticed that children suffering from chronic enteritis are frequently brought to the physician for an increasing swelling of the abdomen. If these emaciated patients are examined all the physical signs of free fluid in the abdomen may be obtained, that is, the skin is tense and shiny, undulation is present and movable dulness may be elicited. The symptom-complex strongly suggests tuberculosus peritonitis, yet the areas of dulness are liable to vary from day to day. If such patients are operated on there is generally not a trace of fluid in the abdomen. The condition is due to a relaxation of the mesentery, so that the intestines, filled with fluid contents, will sink to the most dependent portions of the abdomen.

Painful Obesity.—Three new symptoms have been added by B. SCHWENKENBECHER (*Deut. Arch. f. klin. Med.*, Vol. 80, Nos. 3 and 4) to that peculiar condition known as adipositas dolorosa: general muscular weakness, physical anomalies and hemorrhages. Since the obesity is general, the disease should not be confused with painful lipoma. Very often a diagnosis of rheumatism or hysteria is made, as the patients may look well, yet constantly complain of pain. The treatment calls for rest in bed, followed by baths, massage, exercise and antifat diet. The only lesions which the author could find in excised portions of the skin were an abnormal increase of fatty tissue in the cutis. Probably this infiltration, together with the stasis of blood and lymph, is responsible for the pain. In some cases lesions of the thyroid, hypophysis and of Goll's tract were found, but it is doubtful if they bear any etiological relations to the disease.

Trypanosoma Disease in Man.—The organism known as *Trypanosoma* has for some time played an important role in animal pathology, and isolated cases of this infection in man have been observed for two years. It is now generally conceded that there are two distinct forms of the disease, depending on the localization of the germ: trypanosomasis proper and the sleeping sickness of negroes. In a case of the former, observed by A. GUNTHER and C. WEBER (*Münch. med. Woch.*, June 14, 1904), the chief symptoms were: A chronic course extending over years, recurrent periods of irregular fever, gradual loss of strength and anemia, local transient edema, a peculiar affection of the skin, swelling of the liver and spleen, increased pulse, occasional dyspnea and an irritability of the vascular system. The skin manifestations were irregular, red spots on various parts of the body, which disappeared on pressure. An absolute diagnosis can always be made by finding the worm-like parasite in the blood during the febrile period. In addition, the blood may be injected into rats and apes, which are very susceptible. The leucocytes are generally diminished with a relative increase of the mononuclear elements.

Diagnosis of Typhoid Fever.—Statistics have been collected on all typhoid cases during the last eleven years by F. WESENER (*Münch. med. Woch.*, June 7, 1904), who gives the frequency of the ordinary symptoms as follows: Palpable spleen 60.4 per cent., roseola 78.5 per cent., diazo reaction 85.2 per cent., Widal reaction 75.1 per cent. It seems that the most constant symptom of typhoid is the diazo reaction and its absence during repeated examinations argues for some other disease. Its chief disadvantage is its occasional presence in non-typhoid conditions, and this also applies to the Widal, for the author obtained distinct agglutination also in some cases of malignant endocarditis, influenza, miliary tuberculosis and sepsis. Even improved bacteriological technic and special culture-media do not render the diagnosis always easy, especially since such closely allied diseases as paratyphoid have been recognized. The diagnosis of typhoid is also discussed by D. ROLLY (*Münch. med. Woch.*, June 14, 1904), who lays great stress upon the bacteriological examination of the blood. The technic is very simple: Twenty c.cm. of blood are removed from a vein at the elbow, mixed with liquefied agar and poured into Petri dishes. The colonies will develop in one or two days and can be identified with agglutinating animal serum. A positive result was obtained in 88 per cent., including a large number of early cases, where the Widal was still negative. The great drawback of the method lies in the fact that it is hardly applicable for the ordinary practitioner, since it necessitates a bacteriological laboratory. The blood may, however, be diluted with a suitable fluid which does not kill off the germs, and then be sent to a bacteriological laboratory. For this purpose the author recommends a solution of five grams of peptone and fifty of glucose in 100 c.cm. of water. Twenty c.cm. of blood mixed with twenty c.cm. of this sterilized solution will not coagulate and the germs will keep until the following day. In order to obtain a permanent typhoid culture for the Widal, toluol or formuol is added to a five-day-old culture. The agglutination occurs in the same dilution as with live germs, but somewhat later; it may be observed both micro- and macroscopically.

Tuberculous Pericarditis.—The rarity of this condition is illustrated by the fact that among 1,077 autopsies, performed at the University of Palermo, SCAGLIOSI (*Deut. med. Woch.*, June 9, 1904), found it present in only one instance. The patient, a woman of sixty years, had died as the result of a pyelonephritis. After death a moderate amount of fluid was found in the pericardial cavity and the lining membrane was irregularly studded with small nodules, which were proved to be tuberculous. No other tuberculous lesions were found and the writer thinks that the patient's age was the predisposing factor in determining this localization, for, as is well known, the cardiac vessels in the aged are more or less diseased and thus offer a point of lessened resistance to the invasion of the tuberculous process. That primary tuberculous pericarditis may exist as a disease entity is therefore claimed by the author to be a rational assumption.

Tuberculosis in the South of Ireland.—This portion of the British Isles has as yet been sadly neglected in the application of sanitary and hygienic methods. J. DARLEY WYNNE (*Brit. Med. Jour.*, May 28, 1904), states that unfortunately, according to the reports of the Registrar-General for 1902, it is shown that while in England and Scotland the death rate from all forms of tuberculous disease has fallen to a remarkable degree in the last thirty-nine years, in Ireland it has actually increased. In 1864, it was throughout the island 2.4 per thousand, whereas in 1900 it reached a maximum of 2.9 per thousand. In the urban districts, having a population of 10,000 and upward, the rate was 4.29 per thousand in 1901 and 4.1 in 1902. The highest death rate from tuberculosis was in Clonmel, where it reached a maximum of 6.5 per thousand in 1901. In 1903 it was somewhat lower, but still the rates were extremely high. If other diseases were proportionately high in this particular township the population would soon become extinct, but as a matter of fact, death from other causes is not in proportion to the tuberculosis death rate. The cause for this condition of affairs is to be found in the type of Irish cabin. One enters a yard outside of the house and is obliged to go to the front door through a pond of filthy wet manure. The interior of the cottage is lighted by a dim light in which one can, after becoming accustomed to the gloom, see from six to a dozen half-naked children huddling over the embers of a peat fire. The floor is of mud and damp. There is but one window; this serves to keep out the air, for it is always shut. Contrivances which look like sailors' bunks are fixed against the wall in an inner room. They are carefully curtained to keep out light and air and are smothered in dirty bedclothes. A single window lights this room. This is where the unfortunate consumptive spends his last hours of life and where he breeds millions of germs for the remainder of the family to die from later on. In towns of the type of Clonmel there is no overcrowding. The backyards are about 20 feet long by 15 feet wide. In one corner, there is usually a faucet through which the town water supply can be obtained. Beneath it the trap is almost always defective and the yard is ill and irregularly paved. Of drainage systems, both for human and animal excrement, there is usually not the slightest trace. The receptacles in which this material is contained, are emptied at irregular and inadequate intervals, since the authorities do not oblige land owners to attend to this important factor. By a most pernicious arrangement, the filthy material, when these pits are cleaned, has to be removed directly through the house. It is probable that the horse and cattle fair, which takes place every month in Clonmel, is a very important factor in making the mortality from tuberculosis so high. Vast numbers of cattle are herded together for hours all over the principal streets and up against the shop fronts, and when the day is wet, the filthy condition of the roads makes them impassable. The milk supply of these towns is probably a further factor in spreading the disease, unless the views of Koch be correct, for vast numbers of the herd are infected with tuberculosis, no effort being made to regulate this part of the food supply of the commonwealth.

Atypical Lymphatic Leucemia.—A most peculiar case of lymphatic leucemia has been observed by A. WOLFF (*Wien. klin.-therap. Woch.*, June 26, 1904). The blood examination at first suggested pernicious anemia, since the red cells were below one million and the leucocytes not numerically increased. The absence of deformed and nucleated cells and the preponderance of large mononuclears made a leucemia of lymphatic type more probable. The clinical symptoms were only those of anemia and at autopsy the lymph nodes were atrophic rather than swollen. The diagnosis was, however, settled beyond doubt by the presence of lymphatic changes in bone-marrow and liver. In a second similar case there were two million cells, a normal number of leucocytes, of which 50 to 75 per cent. were mononuclear, a large spleen and a very chronic course with remissions.

Herpes Zoster in Pneumonia.—In 30 to 40 per cent. of all cases of croupous pneumonia, B. RIEHL (*Münch. med. Woch.*, June 21, 1904) found a well-marked herpetic eruption. The male sex seems to be affected more often than the female. Usually one and

the same individual is affected only once and the eruption generally makes its appearance on the third or fourth day of the disease, in the area of the second and third branch of the fifth nerve, preferably the infraorbital. Quite exceptional locations are about the eyes, the forehead, neck, anal and coccygeal regions and the extremities. During infancy and old age herpes is hardly ever seen. It is a noteworthy fact that mild cases show the most abundant vesicles, while severe and fatal cases are almost free from skin lesions, so that they possess prognostic importance.

Metabolism in Chlorosis.—The metabolic changes which occur in chlorotic patients, as manifest by the examination of urine and feces, may be summed up as follows, according to G. VANNINI (Virchow's Archiv, Vol. 176, No. 3): The urine is generally normal as far as amount, specific gravity, molecular concentration and acidity are concerned, but abnormal in that a retention of nitrogenous principles seems to occur and that these different principles bear an abnormal relation toward each other. The amount of ether sulph. acid is not increased, while an excess of neutral sulphur is common; the earthy phosphates are diminished and the amount of chlorides varies. Subnormal amounts of chloride are found in the fecus, but the amount of ash and its contents of lime, magnesia, soda and potash, does not suffer any change.

Pseudoleucemia Lymphatica.—(*Gazz. degli ospedali*, June 19, 1904.) A male patient, aged fifty-seven years, with negative family history, denying syphilis and alcohol developed painless swellings of the lymphatic glands of the neck, with some constitutional symptoms, both of which disappeared completely in a week. The glandular enlargement returned, and the neck became much enlarged. Occasional chills and increase of temperature were noted. Emaciation and anemia developed. Physical examination was negative, except the presence of a hemic murmur. The white corpuscles were 10,000; the red, 3,200,000. Glandular swelling increased; there was a higher temperature, physical weakness, a trace of albumin in the urine. The spleen gradually increased in size. Death occurred three months after patient entered the hospital. Autopsy revealed the following facts: Marked anemia of all organs. Fatty degeneration of heart and liver, spleen much increased in size, pulp soft, red, with four or five areas of infarcts. Kidney enlarged, pale somewhat sclerotic; medulla of long bones, lymphoid, pale red, not fatty. The lymphatic glands are enlarged, the peribronchial and peritracheal form a hard mass. Other enlarged glands show increase of fibrous tissue, or parenchymatous enlargement. Under the microscope marked change of structure was seen, notably endothelial cells, large and small lymphocytes and eosinophiles. Some areas closely resembled lymphosarcoma.

THERAPEUTICS.

The Crisis and Treatment of Pneumonia.—A new method for treating this disease is advocated by W. J. GAILBRAITH (*Jour. Am. Med. Ass'n.*, July 9, 1904), which is not offered as a specific, but is claimed by the author to have greatly reduced his former mortality. His experience leads him to believe that the so-called pneumococcus may be associated with the etiologic factors of pneumonia, but is not its specific cause. The first attention rendered the ordinary cases admitted to his hospital (in Sonora, Mexico), is a warm bath and a saline cathartic. Quinine and iron are given under the following indications: When the temperature has reached 105° or over, 60 grains of quinine sulphate are administered, followed in one-half hour by half this amount, 30 grains, and in another half hour, by 15 grains. At this time the administration of tincture of iron chloride is begun in doses ranging from 7 to 15 minims, depending on the date of the disease and the condition of the heart. On the first or second day of the attack, 10 minims are given, and this is increased one or two drops each day up to the sixth or seventh, unless the pulse remains full and strong. When the temperature is 104°, the author gives 50 grains, and follows the same course. When it is 103°, 30 to 40 grains are given. During convalescence combinations of the following were found to be of value, elixir of iron, quinine, and strychnine, guaiacol and cod liver oil. But best of all at this time is thorough ventilation and sunlight, with plenty of milk, eggs and beefsteak. The term crisis he considers a misnomer, and presents pneumonic cardiectasis as a more descriptive term, which attracts attention specifically to the overdistended and disabled heart. Stimulants are contraindicated during this time, as they increase the mechanical conditions that are distressing the patient.

A Case of Tuberculous Leprosy.—There are said to be over one thousand lepers in Russia, although the exact number is not known, and they are mostly to be met with in the villages. G. LELEWSKY (*Prakt. Vrach*, Nos. 9 and 10, 1904) considers leprosy as a malignant constitutional disease, almost always of a chronic nature. The case reported by him was that of a man of twenty-seven years, who became ill five years before at sea during a storm, when he caught a severe cold. The advance was gradual though well marked. The skin presents at places thickened spots of a dark bronze color, especially noticeable at the tip of the nose. There is an almost complete absence of hair over the eyebrows and lashes. The ears and lips are considerably thickened; the face presents the typical leonine appearance. There is a beginning keratitis in both eyes, the commencing pannus leprosus. The skin of the arms is covered here and there with spots of a dark bronze color, same to be seen on the feet. There was a large grayish-white spot over the palate extending to the uvula. The epiglottis is thickened, and of the same color. Patient complains of dryness in the mouth and throat. As regards treatment, patient was given ol. chaulmoogra in doses of 5 to 20 drops three times a day, but as he was later lost sight of the effect of the medication could not be watched. It might add to the interest of the case if the author had attempted to prove the existence in this case of the lepra bacillus, so that the diagnosis might have been established beyond any peradventure.

Value of Water in Disease.—Attention is called to the importance of a plentiful administration of water, especially in those diseases accompanied by a rise in temperature, by E. HOMBERGER (*Berl. klin. Woch.*, June 20, 1904). For by this method the most distant cells may be reached and affected. Water is the great natural curative measure and the easy method of application should not cause it to be neglected. As cellular pathology demands a cellular therapy, this agent seems to be the most rational means to attain that end. In the presence of fever especially, the administration of water should be made a particular effort, as there is an insufficient quantity present in the system, and as the body is slow to give this up, a diminution in the quantity of sweat and urine results. The author claims that perspiration is only restored when the temperature begins to drop and the superfluous water is no longer needed. Where toxins have circulated in the blood for a considerable period, the giving of water is of great value, but where these products leave the system rapidly and unite with the cells, it can be of little avail.

Treatment of Snake Bites.—Since 1869, permanganate of potash has been used as a chemical antidote in cases of snake-bite. An experimental investigation of the value of this substance has been made by SIR L.

BRUNTON, SIR J. FAYRER, and L. ROGERS (*Proc. Royal Soc.*, May 28, 1904). Brunton devised an instrument that might be used in cases of snake-bite. It consists of a lancet-shaped blade about half an inch long, long enough to reach the deepest point of a bite by the largest snake. It is set in a wooden handle about an inch and a half long, which is hollowed at the other end so as to form a receptacle for the permanganate. Two wooden cups are fitted over the ends of the instrument, one to keep in the permanganate, and the other to protect the lancet. Such an instrument might be carried in the pocket and used by even the ignorant natives of the snake-infested locality. The plan proposed is to make a free opening at the site of the bite and to rub in crystals of permanganate. The limb is first surrounded with a tight bandage above the bite. The puncture of the teeth should be freely cut into and the crystals of permanganate introduced and rubbed about, a few drops of saliva being added. The value of the above method of treatment was experimentally tested on animals. The venoms of nine varieties of snakes were employed. In the cases of each ten or more lethal doses, and in the most of them twenty lethal doses were neutralized by very small quantities of permanganate in solution, and thus rendered harmless. These experiments prove that this agent acts on every class of snake venom and renders them inert. The experiments were performed on rabbits, pigeons and cats.

PHYSIOLOGY.

Secretion of Acid by the Kidney.—A study of the mechanism by virtue of which the kidney excretes an acid urine from the alkaline blood, was made by A. R. CUSHNY (*Jour. of Physiol.*, June 30, 1904). The latter found that the reaction of the urine varies within strict limits in diuresis; it is never alkaline to phenolphthalein nor acid to methyl-orange, and thus corresponds approximately to the interval in reaction between mono- and di- sodium phosphate. The intravenous injection of most saline diuretics is followed by a marked fall in the percentage acidity, partly because the phosphates are present in only small amount, and partly because the absorption in the tubules is deficient. Phosphates injected intravenously give an acid reaction to the urine which is especially marked when the diuresis is partially prevented by increasing the absorption of the tubules. This is explained by the hydrolytic dissociation of the phosphates of the glomerular fluid, which permits of the absorption of the cation along with hydroxyl or carbonate anions; these are capable of permeating the epithelium, while the phosphate anion fails to penetrate it so freely and remains in the tubules along with the hydrogen cations replacing the original ones. The essential factors in the secretion of acid urine are (1) the presence of salts in the glomerular fluid which are capable of extensive hydrolysis and of which the cations can permeate the epithelium, while the anion fails to do so in equal measure, and (2) insufficient absorption in the renal tubules. The phosphates alone of the salts examined fulfil these conditions completely. The carbonates fail to do so because the anion is absorbed, and the borates satisfy the condition only in relation to phenolphthalein, since the anion is too weak to compete with the stronger anions of litmus.

The Coagulation of Milk.—The chemistry of the phenomena that underlie and influence the coagulation of milk has been carefully worked out by A. S. LOEVENHART (*Hoppe-Seyler's Zeitsch.*, March 5, 1904). Milk is curdled by the following causes: (1) Turning sour upon standing; (2) the latter together with heating; (3) the addition of acids to fresh milk; (4) fresh milk heated to 110° to 130° C. in a closed tube; (5) fresh milk heated with $CaCl_2$; the addition of rennet to fresh milk; (7) the heating milk to which too small a quantity of rennet has been added to effect coagulation; (8) milk coagulates during a storm (the cause of this is not yet understood); (9) electrolysis. In 1, 3, 4, 8 and 9, the coagulation is to be attributed to an acid which liberates casein from its union with calcium. According to Hammarsten, the effect of rennet is to cause a splitting of casein into lactalbumin and paracasein. This is very similar to casein and differs from it in being coagulated by calcium salts at ordinary temperature, while casein requires higher temperatures. The metals may be divided into three groups with respect to the action of this salt upon casein and paracasein. The first group which contains the strongest metals, as sodium, precipitate neither casein nor paracasein. The second group, which contain lithium, etc., precipitate paracasein rapidly from its solutions at room temperature, but casein only after standing a long time at 40° C. or higher. The third group coagulate both bodies promptly at room temperature, and include all the other heavy metals, as iron. The precipitating power increases progressively with the transition from the strongest to the weakest metals. The precipitation of paracasein by colloidal solutions as acids, salts and alcohol is brought about more easily than that of casein. There is no evidence that casein and paracasein are distinct substances, for all their differences are of a physical nature and indicate that these two substances are modifications of one and the same thing. Decalcified milk is coagulated by salts of the following metals; calcium, strontium, barium, etc., which fact indicates that probably the coagulation if mild is largely dependent upon a change in the arrangement of its mineral constituents. Acids are only the indirect cause of coagulation; the direct cause is calcium. The addition of ammonium oxalate to acid milk inhibits coagulation.

The Production of Hemolysins and Agglutinins by the Stromata and Liquid of Laked Corpuscles.—A series of experiments were performed by G. N. STEWART (*Am. Jour. Physiol.*, June, 1904), with the view of determining the effect of the injection of the stromata and of the substances which escape from the corpuscles respectively, in hemolysins, caused by various laking agents as regards the production of specific agglutinins and lysins. He found that the stromata and hemoglobin, containing liquid of colored corpuscles, laked by various agents (water, freezing and thawing, heat, saponins, foreign serum), cause, when injected into animals of a different species, the production of specific agglutinating and hemolytic substances. In general, the agglutinating effect is most marked after the injection of liquid. But the results do not warrant the conclusion that in the intact corpuscle the agglutinogen (the substance which causes the production of agglutinin) is all in the stroma, and the hemolysinogen (the substance which causes the production of hemolysin), all in the cellular contents (in Nolf's Sense). Corpuscles fully fixed by formaldehyde cause, on injection, the production of specific agglutinins, and to a smaller extent of specific hemolysins. Such corpuscles are capable of being agglutinated by specific sera.

The Comparative Physiology of Peristalsis.—A study of the peristaltic movements in the lower organisms (worms, etc.), leads W. BIEDERMANN (*Pflüger's Archiv.*, May 21, 1904), to conclude that direct muscular conduction plays no rôle in these phenomena. They are rather bound up with the integrity of the central nervous system and are the result of progressive segmental reflexes, in which any passive stretching of the muscle of any segment produces reflexly a contraction of the circular muscle, and probably a synchronous relaxation of the longitudinal muscle.

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CANCER ETIOLOGY AGAIN.

SCARCELY has one apparently important contribution to the question of the etiology of cancer been made before another is announced that undoes something at least of the supposed significance of the previous work. At the beginning of the present year, as the result of an investigation conducted by a special commissioner Doctors Farmer, Moore and Walker in London announced that the real factor of cancer consisted in a transformation of the cells of normal adult tissues into modified reproductive tissues. Since reproductive cells are selected very early in embryonal life for the special purpose of carrying on the race, a reversion of other cells to this type later on in life might seem impossible, but the observations of these investigators apparently demonstrated that such a transformation actually took place. There is a diminution of the chromosomes in the cells of malignant tissue, just exactly the same as is noted in reproductive cells.

The mitotic changes in the cells of cancer have occupied attention for a considerable period. It has been recognized that the appearance of these cell changes had a special significance. Mitosis occurs much more frequently than in normal tissue, even when it is undergoing regeneration and certain anomalies in the mitotic figures are characteristically present. For a while it was thought that this heterotype mitosis, might be of a diagnostic value, but this idea is no longer accepted. The declarations of Farmer, Moore and Walker recalled attention to them and seemed to find the explanation of the whole process of malignancy in the anomalies observed in them.

The report of the cancer research fund of the Royal College of Physicians and Surgeons of London, which has been recently issued, does not accept the conclusion with regard to the explanation of cancer as a reversion of cells to the reproductive type. In the section on the cytology of cancer it is said that after careful observation the number of cells exhibiting mitotic changes varies very considerably in different tumors. The number of cells observed in mitosis bears no relation to either the rapidity of growth of the tumor or to the tendency for it to produce metastasis. In a word, although the observations with regard to the occurrence of anomalous mitoses are confirmed, there is no distinct relation between this cellular reproductive process and the malignancy of the tumor in which it occurs. In rapidly growing tumors with tendencies to degeneration it may be hard to recognize the presence of mitotic cells in any number.

In another way the question of the possibility of reversion to reproductive type causing malignancy has been carefully studied. Portions of tissues removed from the testes and ovaries of living animals that are known to be liable to cancer have been transplanted to other tissues without any serious result and absolutely without any sign of invasion of the surrounding parts by this foreign type of tissue. These observations, of course, only confirm what is known with regard to the transplantation of ovarian tissue, for in a large number of instances gynecologists have deliberately transplanted portions of the ovaries without producing any serious results.

This is the negative side of the report. The positive side is of distinctly as much interest. The zoological distribution of cancer is now being studied to good effect. Specimens obtained from nearly all the various forms of domestic animals are described in detail in the report. While, of course, it has been known that the cow, the dog, the horse, the sheep, the cat and the mouse are especially liable to suffer from cancer, it is now definitely ascertained also that the warmer blooded birds and the cold blooded fishes

are no exceptions to this rule. Specimens of cancer from the hen are shown, as also some from the trout. Wild and domestic animals seem to suffer equally from the disease, though, of course, there are more opportunities for its observation among the domesticated. An explanation for the occasional transmission of cancer, such as occurs from one lip to the other in epitheliomatous cases is to be found in certain experiments upon mice. Borrel's success in transplanting true cancer from mouse to mouse gave great hopes of an explanation of cancer etiology being reached in this way. The cancer research commission repeated these experiments in some 250 cases with a successful result in over 25 per cent. of the cases. If the tumor tissues were exposed to a temperature equal to that of the human body for twenty-four hours between the time of its removal from one animal to implantation in another, no successful results were obtained. Mechanical disintegration of the tissue by crushing in a mortar also prevented successful transplantation.

The nucleus of the cancer cells still continues to be a point of greatest interest. Some years ago von Hansemann, of Berlin, announced that the nucleus of cancer cells was characterized by having less chromatin than normal. It was somewhat in line with this idea that Farmer, Moore and Walker's work suggested the reason for this in a diminution of the number of chromosomes, because of reversion to the reproductive type. The present report confirms these observations with regard to the hypochromatic nucleus, but suggests that certain appearances within the nucleus are also important. In many carcinomata nuclear figures exist, which would seem to suggest that a conjugation of cells had taken place. If this were the case it can readily be understood that a new cycle of life and development would be begun, and that luxuriant reproduction of such tissues might be expected. Such cells would be likely to grow independently of their environment in the tissues and take on the essential characters of malignancy. They would infiltrate and deprive other tissues of nutrition, and if carried to a distance in the fluids of the body continue their independent existence producing the typical metastases. Whether this is to prove a pregnant hint for the solution of the most important problem, the etiology of cancer, remains to be seen. Once more we depart from the nature of micro-organisms to suspect some essential change in the vitality of the cells.

FORMS OF ARTHRITIS.

There is no doubt that so-called rheumatism in many of its forms is a motley assortment of most intractable diseases. Recently the general public has been treated to a book on a rheumatic man's adventures, the title of which is "Being Done Good," with Comments on the Advance made by Medical Science during the past 5,500 years in the Treatment of Rheumatism. The author claims to have tried every thing under the sun that physicians have suggested to him, or that he has obtained from tradition, or found in books, yet without obtaining any relief.

There is little question that there are many others who could tell a somewhat similar story, and there is even less doubt that this state of affairs will continue until it is more generally recognized and thoroughly appreciated that "rheumatism" is a very general term that has been made to cover a multitude of affections, most of which bear no relation to true rheumatic arthritis.

At the present moment much attention is being devoted to uric acid as a causative factor in rheumatic manifestations. There is even a *Uric Acid Monthly* (save the mark!), a proprietary sheet devoted entirely to the rubbish written about the so-called uric acid diathesis as the groundwork of nearly all the ills to which flesh is heir and many others in addition.

If the advertisements for various proprietary preparations, of varying hues of ethical coloring, are to be trusted, uric acid is the most important pathological element in the human body. If Macaulay's traveler from New Zealand should sometime, while nosing around the foundations of the Brooklyn Bridge, and the cornerstones of churches that are being laid at the present time, find copies of our present-day newspapers, especially the advertising columns, he will be sure to think that uric acid was the special curse of our generation and that ours might very well have been termed the uric acid age in medicine.

At the last meeting of the American Medical Association, however, nearly every one who took part in the discussion of arthritis deformans disclaimed utterly any belief in the uric acid theory of the origin of rheumatic or arthritic manifestations, and there was no doubt at all that the audience was thoroughly in sympathy with these nihilistic opinions, now voiced for many years in the Medical News.

On the other hand, there was quite as general an expression of opinion that true rheumatic arthritis can be recognized by the fact that it

leaves no trace of its presence in the joints. If lasting joint changes have occurred it is a sign that some secondary infection has been at work. Rheumatic polyarthritis has as distinct a tendency to run a definite course and get entirely well as does pneumonia, which it resembles in many other respects.

With regard to arthritis deformans itself, there remains the question whether this name may not itself cover a group of diseases rather than a single pathological entity. While the disease has attracted attention only in comparatively recent years its history goes back to the very earliest times, signs of its occurrence having been found on the bones of mummies and other preserved bodies all down the centuries, exactly in the form in which it is now observed. The changes in the spine which are especially characteristic of one clinical form of arthritis deformans have been found and leave no possible room for doubt in this matter. As seen at the present time, arthritis deformans exists in an atrophic and hypertrophic form and the question is still in doubt whether these are the same or different pathological processes. Occasionally atrophic and hypertrophic lesions are found in the same subject. This is rather rare, however. Good authorities insist that they have never seen one form of the disease change into the other. Like the question of hypertrophic and atrophic cirrhosis of the liver, there would seem to be need of further careful clinical observations in order to decide the question.

That all the deforming changes in joints are not due to arthritis deformans has now come to be very generally recognized. In some of the cases, especially where only one or two joints are involved, other forms of infective arthritis are more than suspected. While a monarthritis of the hip or shoulder-joint is not uncommon in older people and is considered to be a manifestation of arthritis deformans, in younger persons the confinement of the disease to a single large joint must always give rise to a suspicion of infection by some micro-organism, very frequently the gonococcus. The typical signs of arthritis deformans are the involvement of the small joints of the fingers and toes and a tendency to invade the submaxillary joint and the joints of the cervical spine. There is a general tendency to believe that the disease is infectious in its nature and at least one micro-organism has been isolated, which on injection into animals has produced deformity of joints, but the results of experimentation are as yet very fragmentary and untrustworthy. This, like other questions connected with the disease, must still remain as a subject for further investigation.

Unfortunately the treatment does not prove very promising. The warning not to do harm is the most important element in present-day therapeutics. It has been too often the custom to limit the diet of patients suffering from arthritis deformans, and the consequence has been a lowering of the general condition, which has invariably done harm rather than good. The appetite is usually a safe guide, though digestive disturbances must be corrected, and this may require careful selection and limitation of some one of the three ingredients of a mixed dietary, fats, carbohydrates or proteids. On the other hand, it is very clear that the salicylates, if used for any considerable period, do not relieve pain, while they do produce a tendency to anemia likely to react upon the patient's general health. Of the modes of active treatment the most important procedures consist in hot applications of some variety. Hot air and hot baths are the most helpful, though these alone are palliative rather than curative. As soon as the acute stage of arthritis deformans has passed, passive movement and massage are of value. The index for their employment must be the amount of pain they cause. Where pain is severe they are contraindicated. The prognosis of the disease is not as hopeless as has been thought, although there is a distinct liability to the recurrence of acute exacerbations of the disease, each one of which leaves the patient somewhat more helpless than before. The employment of the word rheumatism with regard to these recurring attacks has given a very bad name to a benign affection and has utterly confused the true therapeutics of the group of joint diseases. It has also often blinded the eyes of the young clinician and prevented his seeking for differentia in diagnosis.

ECHOES AND NEWS.

NEW YORK.

Infant Mortality High.—The Board of Health is having about 100 persons, including the entire summer corps of doctors and nurses, investigate the high mortality now prevailing among infants. In the week ending last Saturday there were 279 more deaths from diarrheal diseases than in the corresponding week of 1903, and this increase of infant mortality advanced the death rate for the week to 23.46.

The Paterson Drainage Canal and New York Bay.—Under the caption, "The Proposal to Make Our Bay a Cesspool," the *Sun* writes: "There are many

thousands of New Jerseyites who transact business in this city. They sleep on the other side of the North River and vote there. But apart from their families their interests lie on this side. When they travel they put 'New York' after their names on hotel registers. For all practical purposes they are New Yorkers. But for the existence of an imaginary line separating the two States, the places where they live would be a part of the greater city. What do these people think of the fight which is being made to drain a number of cities in northern New Jersey into our harbor and place the metropolis in peril of disease? Dr. Lewis, the head of the New York State commission which investigated the subject recently, says: There is one thing on which the commission, I think, is already fully agreed: that the waters of the bay and the rivers are already carrying all the sewage they ought to carry; and I have no doubt that the report of the commission will urge that the existing conditions at least remain stationary. While the old sewers cannot well be fitted with apparatus for the sanitary treatment of sewage, no new sewers should be opened without such apparatus. He added that the New Jersey scheme would put an open cesspool under our very noses. Fortunately, the decision of the New Jersey Supreme Court in favor of the constitutionality of the plan does not settle anything. New York will carry the matter to the Court of Errors and Appeals. And if beaten there, the final engagement will take place in the United States Supreme Court. An individual has to respect the rights of his fellow man. It is quite absurd for a community to imagine that it has any more right than an individual to ignore the safety, the peace of mind, the comfort of the neighboring community.

PHILADELPHIA.

Polyclinic Hospital.—Dr. William Sweet has succeeded Dr. H. F. Hansell as professor of Diseases of the Eye. Dr. Hansell, who resigned, becomes professor emeritus.

Death of Superintendent Smith.—Robert M. Smith, superintendent of the Philadelphia hospital, died July 20 from gastritis. O. A. Bohler, house agent, is at present acting superintendent.

Hospital for the Treatment of Cancer.—A number of physicians of this city, aided by several public-spirited lay citizens, contemplate founding a hospital for the treatment of malignant disease. A preliminary meeting has been held to formulate plans for the undertaking. The hospital is to adhere to no one method of treatment but any and all means that promise results will be tried.

Report of Food Commissioner Warren.—The report of State Dairy Food Commissioner Warren for 1903 shows that 1800 prosecutions were ordered because of infringements of the Pure Food Laws. From these were collected as fines and costs the sum of $93,450. The Pennsylvania Pure Food law of 1895 is said to be the most effective in the United States, but suggestions are made for its improvement so that prosecutions can be more readily brought to termination.

University of Pennsylvania.—The present medical hall of the University is to be renamed Logan Hall, in honor of a former trustee, and largely given over to other work. Most of the medical teaching will be given in the new medical laboratories; the old building will be used for anatomy, didactic lectures in surgery, and chemistry. The remainder of the building will be occupied by the school of finance.

CHICAGO.

Taking Care of the Children.—In 1870 the population of Chicago, by the United States census, was 306,605, and there were 4,600 deaths of children under five years of age reported. These figures show a proportion of something over 150 children's deaths in every ten thousand of the population. Thirty years later, that is, 1900, the same authority fixed Chicago's population at 1,698,575, and there were 8,285 under five years of age deaths reported. These figures show a proportion of less than 49 children's deaths in every ten thousand of the population, a decrease of more than two-thirds. A further analysis of the statistics shows better results for later periods. During the ten years 1884-1893 there were 89,633 deaths under five years of age in the City of Chicago. The average yearly population of this period was 954,676; therefore, the deaths under five years were 93.9 in every ten thousand of the population. During the ten years 1894-1903 there were 88,816 such deaths—or 817 fewer than in the first period The average yearly population of this latter period was 1,609,110 and the deaths under five years were, therefore, 55.2 per 10,000. These two sets of figures show a decrease of child mortality of much more than one-third (41.2 per cent.) in a single decade. While the average population increased 654,434, or 68.5 per cent., the under-five-years deaths were actually fewer.

Dinner to Dr. Earles.—A dinner was given to Dr. W. H. Earles, Milwaukee, Wis., July 16, at 8 P.M., at the Republican House. Dr. Wm. A. Evans, of Chicago, acted as Toastmaster. Toasts were responded to as follows: "Within Mailing Distance," by Rev. P. Fitzgerald; "Our Boyhood Days," by Mr. J. Emil Bench; "On the Campus," by Mr. John L. O'Connor; "Corduroy Roads," by Dr. M. H. Fisk; "Burning the Candle," by Dr. Truman W. Brophy; "Helpmates," by Prof. R. W. Sommer; "Colleagues," by Dr. G. A. Kletsch; "The Citizen," by Hon. David S. Rose, Mayor of Milwaukee; "The Surgeon," by Dr. John B. Murphy.

Suits Against Delinquent Milk Dealers.—Suits against 314 delinquent milk-dealers were successfully prosecuted during the week. The highest penalties, $50.00 and costs, were inflicted on two classes of offenders—those selling the low grade milk after warning, and those found guilty of using preservatives, chiefly formalin.

Dairy Inspection.—Dairy inspection improves in its results each week. Farmers offer to make affidavits that they will abandon the feeding of "wet malt," if allowed to ship their milk into the city, and in other ways show the good effect of the inspections. Of 146 dairies inspected during the week, 20 were found feeding the objectionable material, but promised to quit when the matter was fully explained to them. Sanitary instruction is even more important than sanitary legislation.

GENERAL.

New Sewage System for Paterson.—An opinion filed in the New Jersey Supreme Court, July 23, sustains the constitutionality of the law commonly known as the Passaic Pollution act. This law establishes a sewage system along the Passaic Valley, and provides for the construction of a trunk sewer from Paterson to the New York Bay at an estimated cost of $9,000,000.

Dispensary for Tuberculosis in Ohio.—Trustees of Western Reserve University have voted to establish an anti-tuberculous dispensary in connection with the medical school. The dispensary will register those who are infected with the disease, locate houses in which tuberculous people live, educate the people along fundamental hygienic lines, and its agents will visit the homes of the sick, giving instruction in the care of those afflicted with the disease.

Typhoid in the Navy.—The Navy Department received a despatch on July 23, from Rear-Admiral Barker

at Trieste, giving the first official information which has been received in regard to the typhoid fever epidemic among the officers and men of the American fleet. The despatch is as follows: "Battleships and Mayflower leave for Fiume to-morrow. European squadron separate. Mayflower will return to look after typhoid cases in hospital. Chaplain Isaacs, Capt. Dion Williams, Lieutenant Hudgins, Lieutenant Clement, Ensign Timmons and two sailors doing well."

University of Vermont.—The corner stone for the new medical building for the University of Vermont, was laid July 5, by Hon. John G. McCullough, Governor of Vermont. Short speeches were made by President Mathew Henry Buckham of the University; Dr. Henry C. Tinkham, Dean of the Faculty of Medicine; Dr. A. F. A. King, Professor of Obstetrics, and Ex-Governor U. A. Woodbury, who is one of the Alumni of the Medical Department. The graduating exercises occurred July 6, when fifty-five candidates received the degree of Doctor of Medicine. Those receiving honorable mention were Dean S. Drake and Thomas S. Brown of New Hampshire; Henry Raymond Biggar of New York; G. L. Closson of Vermont, and George B. O'Connell of Maine. Dr. O'Connell was president of his class and Dr. Biggar was elected valedictorian. The commencement being the one hundreth anniversary of the first in the University was a grand affair. Many alumni and former students were present.

Russian Hospital Trains.—The whole of the Manchurian and Siberian railway lines are systematically divided into sections and numbered. Hospital trains replete with the best surgical and other appliances obtainable are apportioned to these sections. The staff of each train includes three or four doctors, from six to ten nursing sisters of the Red Cross Society, and from thirty to forty hospital assistants. Each train has accommodation for two to three hundred wounded and sick.

Medical Society of the Missouri Valley.—The seventeenth annual meeting of this association will be held Thursday and Friday, August 25 and 26, at Council Bluffs, Ia. An entertaining programme is being prepared, and the adoption of a new constitution and by-laws, placing this society in line with the American Medical Association will make this one of the most important meetings in its history. The Committee on Arrangements extends a cordial invitation to the profession, and announces an excursion to Manawa Park on Thursday evening, where a smoker will be given for the entertainment of the visitors. Headquarters and meeting-place will be at Grand Hotel. Following is the preliminary programme: The Clinical Importance of the Reflexes, by H. Douglas Singer, Omaha; Congenital Dislocation of the Hip, by J. W. Cokenower, Des Moines; Recurrent Dislocation of Shoulder Joint and Its Treatment, by A. D. McKinnon, Lincoln; High Forceps Operations, by Mary Strong, Omaha; Temperature, Its Significance and Treatment, by A. E. King, Blockton; Treatment of Prolapse of Rectum, by A. C. Stokes, Omaha; Two Gall-Bladder Cases Presenting Some Unusual Conditions, by Harry Everett, Lincoln; Some Recent Progress in the Surgery of the Large Intestine, by J. E. Summers, Jr., Omaha; The Ocular Manifestation of Syphilis, by W. L. Kenney, St. Joseph; Affections of the Lacrimal Apparatus with Deformities Repaired by Parafin Injections, by Flavell B. Tiffany, Kansas City; Is It Mental Trauma? by S. Grover Burnett, Kansas City; Tinea Trichophytina, by R. C. Moore, Omaha; Treatment of Diabetes, by Le Roy Crummer, Omaha.

The American Association of Obstetricians and Gynecologists.—This Association will hold its seventeenth annual meeting at the Hotel Monticello, St. Louis, Tuesday, Wednesday, Thursday and Friday, September 13, 14, 15 and 16, 1904, under the following administration: President, Walter Blackburn Dorsett, St. Louis; vice-presidents, Aaron B. Miller, Syracuse, and William D. Haggard, Nashville; secretary, William Warren Potter, Buffalo; treasurer, Xavier O. Werder, Pittsburg; executive council, Edwin Ricketts, Walter B. Chase, A. Vander Veer, Lewis S. McMurtry, L. H. Dunning and Rufus B. Hall. The Hotel Monticello has been selected for the headquarters of the association, the management of which should be addressed concerning rooms and rates. The following list of papers has been offered: President's Address, by Walter B. Dorsett, St. Louis; Retrodisplacements as a Cause of Sterility; report of pregnancies following the Alexander operation, by Herman E. Hayd, Buffalo; Cyst Adenoma of the Pancreas, by L. H. Dunning, Indianapolis; Some Clinical Reasons for Advising Early Operations for Fibroid Tumors of the Uterus, by Rufus B. Hall, Cincinnati; Operative Treatment for Relief of Painful Menstruation in Virgins, by W. A. B. Sellman, Baltimore; The Relative Merits of Bag and Metal Dilatation, of Cervical Incisions, and of Cesarean Section in Cases of Accouchement Forcé, by E. Gustav Zinke, Cincinnati; Pseudomembranous Tubercular Peritonitis, by H. W. Longyear, Detroit; The Treatment of Acute Perforated Gastric Ulcer, by Henry Howitt, Guelph; Shall We Remove all Fibroid Tumors of the Uterus Upon Diagnosis? by Thomas B. Eastman, Indianapolis; Scar of Sigmoid Mesentery the Cause of Spastic Obstruction of the Bowels; with Report of Three Cases, by Hugo O. Pantzer, Indianapolis; Surgical Treatment of Cicatricial Atresia of the Vagina, by Charles G. Cumston, Boston; The Advantage of Limiting Artificial Interference in Obstetric Practice, by A. P. Clarke, Cambridge; Uterine Myomas, with Specimens, by Joseph H. Branham, Baltimore; Use of Antistreptococcic Serum in Septicemia and Scarlatina, with Case Histories, by A. G. Hamilton, Springfield, Neb.; An Unusual Case with Many of the Symptoms of Appendicitis, by Magnus A. Tate, Cincinnati; Conservation of the Natural Resistance of the Patient in Surgical Work, by Robert T. Morris, New York; Skeleton of an Ectopic Fetus Removed by Vaginal Cystotomy, by William D. Haggard, Nashville; Infantile Intestinal Diverticula, by J. W. Hyde, Brooklyn; Emergency Operations in Abdominal Surgery, with Cases, by A. Edwin Ricketts, Cincinnati.

Cancer Research.—The paper which the superintendent, Dr. E. F. Bashford, read before the general committee of the Cancer Research Fund in London, writes the *Post*, shows the wide and systematic process of the investigation by which it is hoped to discover the secret, and the cure, of this terrible affliction. Some important facts have been brought to light by the examination of tumors taken from various animals. Through the collaboration of private persons at home and abroad specimens of malignant new growths have been obtained from many lower vertebrates, including fourteen cases of carcinoma in fish. Two cases of malignant new growths in fish possess a special value, because derived from marine fish living in a state of nature, and similar interest attaches to a spheroidal-celled carcinoma discovered in a wild mouse. These are the first authenticated cases of cancer in wild animals. More than 2,000 specimens have been examined, secured from various subjects: Human, 266; horse, 116; cow, 99; dog, 247; cat, 43; pig, 8; frog, 6; bird, 13; mouse, 850; fish, 80; rat, 28; rabbit, 32; sheep, 8; goat, 7; bull, 1; miscellaneous, 329. In this way it has been proved that cancer pervades the whole vertebrate kingdom and presents constant fundamental characters. The

great diversity of the food, habitat, and conditions of life generally of the animals in which cancer occurs indicates that such external agencies have no causative influence. The origin of cancer has to be sought in the life-processes of the cells, and it has been demonstrated that a transplanted tumor will grow only on an animal of the species from which it was taken. There is much significance, too, in the discovery of the conjugation that occurs between the nuclei of cancer cells, as it points to the nature of the problem which has to be solved before growth can be prevented. Dr. Bashford's report goes on to say that there is no evidence to support the theory that certain countries or races of men are immune from cancer. This notion is ascribed to insufficient investigation. Thus the fact that there are more cancer cases in English than in Irish hospitals is due to the lack of competent medical supervision in the latter country. By the aid of the British Colonial Office, specimens of malignant new growths have been obtained from the natives of regions of Africa in which cancer was not known to exist, while through the Foreign Office, the Colonial Office, the India Office, the Egyptian Government, and private observers cancer has been found to be much more frequent in many tribes than it was suspected to be. Fortunately, there are no facts to support the widely spread belief that there has been an actual increase in cancer mortality. Dr. Bashford points out that among 1,786 new growths removed from the human subject in 1904, and supposed to be malignant, there were 127 in which the diagnosis was not confirmed by microscopical examination. In these the characters of malignancy were only simulated, and this, says the doctor, explains many reputed cures of cancer. Inasmuch as many malignant growths present no specific symptoms by which their nature can be placed beyond doubt, the report strongly advises the earliest possible operative interference, even in the case of new growths which may not appear to be malignant. There is no way, it appears, of positively proving them to be beneficient, a dictum which is likely to revive some almost forgotten apprehensions.

OBITUARY.

SIR JOHN SIMON, K.C.B., former president of the Royal College of Surgeons and of the Royal Society, is dead. He was born in London in 1816 and became senior assistant surgeon in the King's College Hospital, in 1840, when only twenty-four years old. Seven years later he was appointed lecturer in pathology at St. Thomas's. He soon established a great reputation by his writings on pathology and therapeutics, and began to devote his best energies to the work of sanitary reform. Being appointed Health Officer of the city of London, he was practically the father of most of the important sanitary legislation of that period. He pointed out the true moral of the several visitations of cholera, with which London was afflicted between 1845 and 1855 and so created a public sentiment which compelled the Government to take necessary precautions. For twenty-one years he held the post of central medical officer, and during that time presented a series of reports to the Privy Council, which may properly be described as invaluable. One of the most important of them was in defence of vaccination. British and European universities honored him with degress, and he was a member of innumerable medical and scientific associations. In spite of his activities in behalf of sanitation, his multifarious reports, and his professional occupations, he published many volumes on miscellaneous subjects, remarkable for their varied erudition and their admirable style. He devoted such leisure time as he could secure to the study of art, metaphysical literature and Oriental languages. Queen Victoria made him a K.C.B. on the occasion of her first jubilee in 1887.

CORRESPONDENCE.

OUR LONDON LETTER.

(From Our Special Correspondent.)

LONDON, June 25.

KING'S BIRTHDAY HONORS—THE BRITISH MEDICAL ASSOCIATION—THE PROFESSORSHIP OF MEDICINE AT OXFORD—DOCTORS AND THEIR FEES—A RIVAL TO LORENZ—THE GENERAL MEDICAL COUNCIL.

THE list of "honors" published yesterday on the occasion of the King's official birthday (his real birthday is November 9, but he chooses to have it celebrated on June 24, so as not to clash with the observance of "Lord Mayor's Day"), makes it pretty clear that if our gracious sovereign continues to occupy the throne for a few years longer a British subject who is not a "Sir" will be almost as rare as an American citizen who is not a "Colonel." The "fountain of honor" has played so freely that the newspapers have evidently found it difficult to discover at short notice who the new Knights and Baronets are. Not all whom the glittering water has sprinkled have been so thoughtful as one of the decorated persons who sent round to the newspaper offices a printed account of himself and his achievements. Among those whom the King has delighted to honor there are very few members of the medical profession. The most prominent of them are Dr. Thomas Stevenson, our best known toxicologist, and Dr. Constantine Holman, whose devoted work for the furtherance of the interests of the profession has long made him a conspicuous figure in the medical world. His business capacity and his tact in dealing with men have enabled him to save more than one of our medical charities from imminent ruin; to him it is mainly owing that Epsom College, which was little better than a fourth-rate charity school for the sons of men who had failed in the profession, has been transformed into a school giving an education as good as any to be got in this country, and rivaling in the number of academical distinctions won by its pupils the foremost schools of England. For half a century he was one of the leading spirits of the British Medical Association, which he helped to carry through more than one crisis. The reforming party, headed by Sir Victor Horsley, who for the last year or two has ruled the destiny of that body, looked upon Dr. Holman as the incarnation of the *ancien régime* and took the first opportunity of getting rid of him. Apart from this professionally insignificant faction, the distinction bestowed on Dr. Holman will be hailed with satisfaction by his brethren. The honor is all the more remarkable as the man on whom it it is conferred has never been anything but a general practitioner, a class on which the sun of royal favor very seldom shines.

The British Medical Association is to hold its annual meeting this year at Oxford. There seems to be every prospect of a successful gathering. The University will be in vacation at the end of July, when the pundits of British medicine will meet, but some of the official magnates will remain to do them honor and show them hospitality. Honorary degrees are to be conferred on some of the men of light and leading in the medical profession, and naturally there has been a difficulty in selecting the recipients. When the late Queen Victoria was about to celebrate one of her jubilees, the judges of the High Court met to draw up an address befitting

the occasion. The first draft made the oracles of the law describe themselves as "Conscious of their own unworthiness." This was objected to by those who had a proper sense of their own merit, and the late Lord Chief Justice Bowen suggested as an amendment, "Conscious as we are of each other's unworthiness." Doctors are not less conscious of each other's unworthiness than judges, and the authorities are having much trouble in deciding as to the claims of rival luminaries of medicine. The beauty of Oxford and the historical and other associations that make it almost a sacred place for Englishmen are sure to attract a number of members to the meeting. The arrangements are excellent. Each section is to have a college apportioned to its use, and the chief University buildings are set apart for the general meetings. The program of scientific work includes most of the questions that now agitate the medical mind, and the list of entertainments offers the assurance that members will find abundant opportunities of distraction after their serious labors.

The Regius Professorship of Medicine, which became vacant in the early part of the year through the resignation of Sir John Burdon-Sanderson, still awaits a new incumbent. The appointment is in the hands of the "Crown," that is to say, of the Prime Minister, Mr. Balfour. The explanation of the delay in filling up the chair is doubtless to be found in the conflict of opinion which is known to exist among the principal advisers of the Crown. There are two parties among those who have an interest in the medical school of Oxford: one composed mostly of physicians attached to London hospitals, who naturally are not anxious that the University should divert students from the schools with which they are connected; the other, eager to make Oxford a living school of medicine. The former wish the Professor to be a dignified figurehead; the latter desire to see the Chair of Medicine, which, as far as the teaching of medicine is concerned, is little better than a sham, converted into a chair of pathology, for the teaching of which Oxford offers abundant opportunities. It is the eternal battle of the new with the old. Which will conquer? The ideal solution would be that a chair of pathology should be adequately endowed, but at present the University has no funds available for the purpose. It is said that a wealthy person is prepared to play the part of pious founder by bequeathing a sufficient sum. But he is not yet dead and apparently has no immediate intention of going over to the majority.

An action at law tried within the last few days in the High Court of Justice throws a lurid light on the fierce struggle for life which is the lot of medical men practising in the poor districts of London. It was stated in evidence that there are doctors who will give advice and medicine for twopence, if the patient calls on them; if the doctor has to visit the patient the charge is fivepence! Sixpence a visit with medicine thrown in is a comparatively high fee. There are doctors who will attend a patient at his own home and supply him with physic for an inclusive charge of three shillings and sixpence a week. And these are not starving young doctors who, like a man whom I knew, keep themselves alive through the winter by drinking cod-liver oil in their own dispensaries, but prosperous traders who drive about in carriages. It is likely enough that the advice and the physic in many cases are together not worth more than the twopence at which the vendor values them, but the wonder remains how a man can make a living on such a scale of fees. Can it be wondered at that the medical profession does not stand very high in public opinion when its own members rate their services so low? The cause of this state of things can be expressed in one word—*overcrowding*. Congestion leads to overcompetition and this necessarily leads to what shopkeepers call "cutting." The question is an economic one which might be left to settle itself in accordance with the laws of the "dismal science." But political economy affords no remedy for the mischief done to an honorable profession by its degradation to the most ignoble of trades

While doctors strive to live on the wages of a crossing sweeper, there is a bonesetter in Scotland who is said to be making $500 a day. Some of the newspapers have suddenly discovered this modest philanthropist and are making it their business to spread his fame abroad. They vie with each other in sensational accounts of his performances with large headings like, "A Scottish Lourdes," "A Cripples' Mecca," and so forth. Never was bonesetter more trumpeted. Not Lorenz himself was more blatantly advertised, and one is almost tempted to see a nemesis in the fact that the Scotch bonesetter is declared to practice a "bloodless surgery" more successful than that by the Vienna professor. The newspapers give pictures of crowds of the lame and the halt besieging the shrine of the healer of cripples; but they do not give illustrations of the crooked backs on which he has operated, or of the dislocated bones which he has "put back into their place." The credulous scribes told off to recount the wonders worked by the "collier surgeon" differ widely as to his methods, but all agree that he has the "healing touch." They say nothing as to his failures and are careful to say little even of his successes; what they lay stress on is the number of deluded people who flock to him from a distance—for it is a curious fact that his own neighbors appear to have no belief in his thaumaturgic "touch"; and of the fees which he receives. Needless to say, no expert attestation of his wondrous "cures" is forthcoming. That, however, will doubtless be attributed to the jealousy of the doctors. It is a commonplace story. One only wonders with Mr. Crumples how these things get into the papers. The mention of bonesetting reminds me that one of the leading hierophants of the cult, "Professor" Atkinson, who died not long ago, has left only a trifle over $4,000. Yet he had an immense practice, not like his Scottish brother practioner, among poor people, but among the richest in the land. Some of the leaders in our surgical Israel did not disdain to meet him in consultation—of course privily and under seal, as Bobadil says. The profits of bonesetting would seem to be as unsubstantial as its "cures."

Sir William Turner, the President of the General Medical Council, will shortly resign that office. Till about two years ago he was Professor of Anatomy in the University of Edinburgh and he has now been elected principal of that seat of learning, a dignified post to which a considerable salary is attached. The honor of presiding over the deliberations of our Medical Parliament is a very barren one, and although Sir William Turner has ruled the assembly with a strong hand he has doubtless found the strain somewhat severe. The Council has managed to get at loggerheads with most of the Universities and Colleges in the three kingdoms. The London Colleges of Physicians and Surgeons openly defy its authority, and there is a growing feeling in the profession that the Council, as John Morley once said of the House of Lords, requires to be mended or ended. The choice of a successor to Sir William Turner will not be altogether easy. The names of Dr. Donald MacAlister, who represents the University of Cambridge, and Dr. Pye-Smith, who represents that of London, are mentioned. The former, who had a very brilliant academical record and who represents the largest medical

school in England, is an excellent man of business, and would make a tactful and efficient president; and the latter, who was for many years physician to Guy's Hospital, would fill the presidential chair with dignity. There is a possibility, however, that one of the representatives of Ireland may be chosen by way of saving the Council from an Irish grievance.

SOCIETY PROCEEDINGS.

THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE.

Seventh Regular Meeting, held May 18, 1904.

The President, S. J. Meltzer, M.D., in the Chair.

Members Present.—Adler, Burton-Opitz, Dunham, Ewing, Gies, Jackson, Levene, Lusk, Meltzer, Murlin, Richards, Salant, Wadsworth, Wallace, Yatsu.

Members Elected.—P. B. Hawk, W. G. MacCallum, A. R. Mandel, R. M. Pearce, Franz Pfaff, William Salant, H. C. Williams, A. S. Warthin.

ABSTRACTS OF REPORTS ON ORIGINAL INVESTIGATIONS.[1]

The Lecithin Content of Fatty Extracts from the Kidney (preliminary report).—By E. K. Dunham. Rosenfeld has shown that the percentage of the alcohol-chloroform extracts from the dried kidneys of dogs, both normal and "fatty," fluctuates within very narrow limits. He calls these extracts "fat," and regards the microscopical examination as entirely untrustworthy for gauging the amount of fat in the kidney. His work on other organs has led him to the conclusion that, when the fat content is increased in the cells, it has been transported from the fat-depots of the body. It appeared to the author of interest to compare the extracts obtained from the kidney by Rosenfeld's method with similar extracts from the depot-fats. It was at once evident that they differed markedly in the percentage of phosphorus they contained, as is shown by the following analytic results:

Alcohol-chloroform Extracts.	Percentage of Phosphorus.
Human kidneys (mean of 28 analyses)	1.3849
Panniculus adiposis (4.2288 grams)	0.0026
Perinephritic Fat (5.6750 grams)	0.0069

The extract from the kidney contains from 200 to 500 times as much phosphorus as the extract from depot-fat. These facts suffice to show that the two extracts are not directly comparable and to throw doubt upon the idea advanced by Rosenfeld that the fat in "fatty" organs is a simple infiltration from the depots of the body.

The phosphorus in these extracts was found to be wholly organic in character. Protagon could not be detected even in 400 grams of the tissue. The quantity of jecorin that may have been present was too small to materially influence the analytical results. The most probable compounds containing the phosphorus are forms of lecithin. The barium hydroxide-platinic chloride method for the separation of cholin was employed with the following results:

	Extract. Grams.	Phosphorus. Percentage.	Platinum. Grams.	Lecithin in the Extract (Calculated as Distearyllecithin.) Percentage.
I.	0.4600	1.43	.....	37.23
	0.4600	1.47	.....	37.45
	1.5859	.....	0.0650	34.50
II.	0.6032	1.12	.....	29.11
	0.6032	1.11	.....	28.99
	2.1556	.....	0.0711	27.40

[1] Proceedings reported by the Secretary William J. Gies, Ph.D., of New York. The authors of the reports have furnished the abstracts. The secretary has made only a few abbreviations and minor alterations in them

Before incineration, in the first case, the platinum salt in the crucible weighed 0.2009 gm. The platinum, therefore, constituted 32.7 per cent. of the salt. Cholin platinic chloride contains 31.6 per cent. of platinum. It appears highly probable, however, that some of the platinum salt was decomposed during the concentration of its solution with heat. It is also possible that some of the cholin suffered decomposition, or was lost, in the manipulations preceding its precipitation with platinic chloride. With these considerations in mind, the foregoing results render it highly probable that the phosphorus is present in some form of lecithin, but, although these calculations are based on distearyllecithin, it is certain that this is not the only lecithin present. The fact that lecithin obtained in moderate purity (about 99 per cent.) from the kidney extract promptly blackens with osmic acid, indicates that the oleic acid radicle is present. The recognition of this fact would make but trifling changes in the calculations in this report. The foregoing analyses appear to justify the conclusion that one may, at least tentatively, assume the phosphorus content of the extracts obtained to be dependent upon the presence of some form of lecithin. Upon this assumption, the calculations given in the following table[1] are based:

	Extract. Percent. of Dry Organ.	Phosphorus. Percent. of the Extract.	Lecithin. Percent. of the Extract.	Lecithin. Percent. of Dry Organ.	Autopsy Report. Cause of Death.	Weight of Kidney. Grams.
			Human Kidneys.			
I.	11.42	2.11	55.07	6.29	Pneumonia and hepatic abscess	200
	12.48	2.00	52.03	6.49		
II.	11.44	1.35	35.14	4.02	Tuberculosis	200
XI.	15.40	1.18	30.84	4.76	Moderately fatty kidney	.....
	15.51	1.19	31.00	4.80		
			Beef Kidneys.			
II.	15.02	2.10	54.64	8.21	.....	.....
			Dog Kidneys.			
I.	14.93	2.04	53.29	7.95	.....	.....
			Rabbit Kidneys.			
I.	16.59	2.53	66.06	10.96[1]	.....	.....

[1] 2.24 per cent of the fresh kidney.

These analyses demonstrate that even in the kidney, which cannot be regarded as one of the fat-depots of the body and which probably plays little, if any, part in the general fat metabolism, the lecithin content must be taken into consideration in any study of the fatty extract. The limited number of the observations here referred to do not justify conclusions bearing upon the question of the nature of the fatty changes met with in the kidney, but it is the author's intention to continue the study of this subject.

On the Phloridzin Test in Bright's Disease.—By P. A. Levene and L. B. Stookey. Investigation of the action of phloridzin in Bright's disease has a theoretical as well as a practical interest. The mechanism of kidney diabetes is as yet imperfectly understood. The original idea that it was due to a change in the permeability of the kidney epithelium has gradually lost support, and instead there is a growing belief in the hypothesis that, in kidney diabetes, the sugar owes its origin to an exaggerated catabolic condition of the kidney. This view was first expressed by one of the authors in 1894. In support of this theory evidence was brought forward to show that in animals with injured kidneys phloridzin fails to bring about glycosuria, or causes it in less degree than in normal animals. However, it is impossible to injure, by means of drugs or by mechanical interference, only one special part of the kidney. In the course of Bright's disease there are known conditions under which the involvement of either the epithelium or of the glomeruli predominates to a very

[1] The author presented a large number of data. The table here given shows only a few examples of the many results obtained.

great extent, and this, of course, enables one to study the seat of the sugar formation within the kidney. The observations of most authors tend to show that when the epithelium of the kidney is injured, administration of phloridzin fails to cause glycosuria, or does so in very slight degree. The authors injected simultaneously phloridzin and methylene blue, and compared the course of the elimination of the dye with that of sugar. The results of their observations in a general way corroborate the statements made by other writers. In acute parenchymatous Bright's disease sugar fails to appear in the urine after the administration of phloridzin. In chronic forms of the disease, when only a trace of albumin can be detected in the urine, and when the permeability of the kidney for methylene blue is normal, there is frequently a diminished sugar elimination (diminished as compared with that in health after injection of phloridzin). In no case was there observed an impaired permeability for methylene blue with a normal sugar elimination, but the contrary was often the case. Levene's modification of Allihn's method was used for the sugar determinations. Further work in this direction is in progress.

Effect of Blood Serum in Pneumonia upon the Heart (Preliminary Report).—By Isaac Adler and Richard Weil. The object of these experiments was to determine whether blood serum in pneumonia has a specific effect upon the heart and, also, whether there is any difference in action between the serum taken *before* and the serum obtained *after* the crisis. The experiments were made upon the heart of the turtle, use of the mammalian heart being impracticable in this connection for many reasons. The fluids to be tested entered the heart through a glass cannula introduced through the right aorta into the corresponding ventricle, passed through the septum into the left ventricle and flowed out through a canula in the left aorta. Care was taken to keep the temperature, concentration and hydrostatic pressure uniformly constant. The veins were all carefully ligated. The small diaphragmatic vein at the apex was tied and cut, the ligature connected with a writing lever and the contractions of the heart thus recorded upon a drum.

Normal human serum acts upon the heart of the turtle as a violent inhibitor, but it was found that in a dilution of 1-20, or, better still, 1-15, it does not differ greatly in effect from "normal saline." All sera were thereupon tested in dilution of 1-20 or 1-15, and the routine of each experiment as ultimately adopted was as follows: Infusion into the heart, (*a*) "normal saline," (*b*) normal blood serum, (*c*) "normal saline," (*d*) serum before crisis, (*e*) "normal saline," (*f*) serum after crisis. In this manner after considerable preliminary experimentation very characteristic tracings were obtained.

Two cases of lobar pneumonia and one case of bronchopneumonia have thus far been studied. The tracings obtained were demonstrated and it appeared from them that the serum in pneumonia before the crisis, at least in the cases tested, acted upon the heart of the turtle as a most violent poison. The contractions at once became extremely weak and slow, and the pauses very long. The serum taken after the crisis gave tracings not very materially differing from those obtained with normal serum.

The Influence of Alcohol on Biliary Secretion.—By William Salant. In the author's experiments fasting or well-fed dogs were the subjects. Operation and collection were conducted in the usual manner. Ether narcosis was employed in every instance without previous injection of morphine. The rate of secretion was studied by comparing the amounts collected during periods of fifteen minutes. The rate of secretion during the first four or five periods was used as a control, at the end of which time alcohol was injected by means of a burette into the femoral vein. Varying strengths of alcohol were used, 4½ per cent., 30 per cent. and 60 per cent. The quantities administered were usually about 4 c.c. per kilo of body-weight.

After the injection of alcohol, it was found in all cases, that the secretion of bile continued to diminish, the diminution in the rate of secretion being, however, somewhat greater than in the two or three control periods immediately preceding the administration of alcohol. Since the much larger quantity of bile of the first and second periods probably represents bile that has been held back during the operation, it could not be considered as a control. The author therefore regarded as a control the rate of secretion during the following two or three periods. Whether this slightly diminished secretion is to be ascribed to the influence of alcohol can only be decided by further comparisons of the rate of secretion in alcoholized and normal animals. Thus, in three dogs without alcohol the rate of secretion corresponding to the alcohol periods was as follows: A decline during the fourth, fifth and sixth periods, succeeded by a rise in the next period. In the second experiment the rate of secretion remained practically steady during the fifth, sixth, seventh, and eighth periods. In the third experiment there was a variation but the average rate of secretion was about the same in the fifth, sixth, and seventh periods, as in the preceding two. It would seem therefore that the diminished secretion following the intravenous injection of alcohol might be due to the effect of alcohol.

A study of the effect of alcohol on biliary secretion after injection into the stomach was also begun. It would seem *a priori* in the light of recent investigations by Bayliss and Starling, Fleig, and Henriot, on the relation of secretin to the secretion of bile, that the author's method of administering alcohol ought to provoke secretion of bile. In the few experiments the author has made thus far he has observed that when 60 per cent. alcohol was introduced into the stomach there was a slight transitory increase of biliary secretion. With 30 per cent. alcohol, there was in some cases an increase, in some a decrease of the secretion of bile as compared with prealcoholic periods. At this stage of the work it would be premature to form any conclusion regarding this point. Whether this slight increase is due to increased gastric secretion and consequent formation of secretin or is reflex in nature will next be investigated.

The Influence of Repeated External Hemorrhages on the General Composition of the Blood.—By G. M. Meyer and W. J. Gies. Various observers have noted the fact that the composition of the blood changes after hemorrhage, but no systematic study has been made of these modifications. The authors have begun such an investigation for the purpose of establishing a more definite basis for comparative blood analysis. They reported the results of their observations on posthemorrhagic changes in the percentage content of water, total solids, organic solids and ash. Further study is in progress. Healthy, well-nourished or fasting dogs, in light morphine-atropine narcosis were used and quantities of blood ranging from 0.2 to 1.0 per cent. of body-weight were taken. These amounts were drawn from the femoral artery and approximately the same quantity was taken in each experiment at regular intervals, varying from fifteen minutes to two hours, until death ensued. In one experiment a continuous fatal hemorrhage was effected and the blood analyzed in portions. Thus far twenty experiments have been carried out.

In some of them the serum was also analyzed. The following conclusions were reported: Hemorrhage causes increase of water and decrease of solids in the remaining blood. *Hemorrhages of about 0.6 per cent. of body-weight* cause little or no change in general composition of the blood until after 2.5 per cent. has been taken. Under the conditions of these experiments it was generally found that the longer the intervals between withdrawals the less the maximal differences between composition of the first and last fractions. Short intervals between bleedings, all other conditions being equal, favored the largest total withdrawals before death ensued.

The differences in the serum ran parallel with those in the blood, but were less marked. The ash did not vary much in either the blood or serum, no matter how much blood was taken. The blood ash and that from the serum were practically the same in relative amount, though different in composition.

When *small* quantities of blood *equal to about 0.2 per cent. of body-weight* were removed at intervals of about a half-hour, little change was noted in either blood or serum until after 3 per cent. had been taken. After this quantity had been lost the changes following further hemorrhage were such as usually occur. The maximum differences in percentage composition of the first and last fractions varied somewhat. The differences in the amounts of solids, for example, ranged from 1.5 to 3.5 per cent. In *fasting animals* the influence of hemorrhage on chemical change in the remaining blood was somewhat more marked than in well nourished ones. The effect on the serum was about the same. Other influences in the experiments were carefully controlled. The observed effects were due only in slight degree to the narcotics and the conditions attending the operations.

Demonstration of a New Portable Sphygmomanometer.—By T. C. Janeway. Dr. Janeway's instrument was designed with the object of securing a thoroughly portable clinical sphygmomanometer, in which nothing essential to accuracy should be sacrificed. It employs the method of circular compression of Riva-Rocci and Hill, with the 12 cm. width of armlet proved necessary by Von Recklinghausen. The special construction of the cuff allows of adaptation to arms from 15 to 34 cm. in circumference. The original feature of the instrument is the folding U-tube manometer. This is a jointed U tube manometer (copied from Cook) fastened to the under surface of the box-lid, so arranged that, when closed for carrying, it measures 10¼ x4⅝x1⅞ ins., and, with armlet and inflator, weighs 2½ lbs. The manometer is perfectly secure when closed and stands firmly when open. The tube-caliber is 3 mm. The sliding scale is empirically graduated for each instrument, to compensate for variations in the glass tubing, and is accurate. All connections are of heavy pressure tubing. For inflation a Politzer bag is used, as by Erlanger, except that one with valve is necessary to fill the large armlet. The gradual release of pressure is provided for by a stop-cock, with needle-valve of special construction, the work of Mr. Charles E. Dressler, who is making the sphygmomanometer for sale. The method of use, as of the other modern sphygmomanometers, is based on the criterion of the return of the pulse after obliteration (Vierordt), for systolic pressure, and is similar to the Riva-Rocci and its modifications. A fair approximation of diastolic pressure may also be obtained in most cases, using the criterion of maximum pulsation (Marey, Mossi). This is especially useful in cases of aortic insufficiency, or marked hypertension. For experimental work upon the systolic and diastolic pressures, it cannot compare with Erlanger's more elaborate and costly instrument, but aims to serve the clinician by providing him with an accurate, yet not bulky or expensive apparatus for general use. Stanton's sphygmomanometer, which appeared after this one had been begun, answers the same purposes. The only criticism to be made of it is that 8 cm. width of armpiece does not afford a guarantee of complete accuracy on arms that are large and excessively fat.

Demonstration of Cytological Preparations.—By Naohidé Yatsu. Mr. Yatsu exhibited seven preparations, demonstrating important cytological structures found both in eggs normally fertilized and in those treated chemically. He spoke on the achromatic figure in mitosis, with special reference to the morphology and cycle of the centrosome.

Preparation No. 1.—Metaphase of the first polar mitosis with two centrioles at each pole (egg of *Cerebratulus*).

Preparation No. 2.—Sperm nucleus with sperm aster, in which each daughter centriole has acquired a new system of rays (egg of *Cerebratulus*).

Preparation No. 3.—Anaphase of the first cleavage mitosis, showing two centrioles in each centrosome (egg of *Cerebratulus*).

Preparation No. 4.—Telophase of the first cleavage mitosis, showing typical centrosomes (egg of *Ascaris*, Prof. Wilson's preparation).

Preparation No. 5.—Mitosis without chromosomes in a late blastula (egg of *Asterias*, unfertilized and etherized). In one of the blastomeres the aster is dividing forming a typical central spindle but devoid of chromosomes.

Preparation No. 6—Cytasters (egg of *Asterias*, unfertilized and etherized). Many cytasters are found in the cytoplasm, some dividing, some forming synthetic triasters.

Preparation No. 7.—Cytasters (egg of *Cerebratulus*, unfertilized and treated with a solution of calcium chloride). Many cytasters have appeared, the first polar mitosis being disturbed.

The Influence of Subcutaneous Injections, and of Instillations, of Adrenalin upon the Pupils of Frogs, with Demonstrations.—By S. J. Meltzer and Clara Meltzer Auer. Many observers have established the fact that subcutaneous injections as well as instillations of adrenalin exert no influence upon the width of the pupil in normal mammals. In a series of experiments published recently by the authors of this report it was shown that from twenty-four to forty-eight hours after the removal of the superior cervical ganglion a subcutaneous injection or an instillation of adrenalin caused a considerable dilatation of the pupil, which lasted an hour and longer. In the present communication the authors report that in frogs a subcutaneous injection or an instillation of adrenalin into the conjunctival sac causes an unmistakable dilation of the pupils of a normal animal. The dilation lasts a good deal longer than was ever observed in mammals even after removal of the ganglion; after instillation some dilatation may be perceptible as long as thirty-six hours. The maximum dilatation may even continue as long as twelve hours after injection.

When the cord is severed just below the medulla oblongata the pupils usually become small and ellipsoid in shape. A subcutaneous injection causes them to become wide and round. Instillation has the same effect. Finally the effect of instillation can be well observed also on the excised eyes, even when the adrenalin is applied some hours after excision, provided the eyes are kept moist. The experiments were demonstrated by Dr. Meltzer.

THE GERMAN SURGICAL SOCIETY.

Thirty-third Congress, held in Berlin, April 6 to 9, 1904.

Suture in Arterio-venous Aneurism.—Körte demonstrated a case of arterio-venous aneurism which had disappeared completely after a vessel suture. Franz has observed a similar case and conducted some experiments which show that the arterial blood may extend into the vein far beyond the knee joint, when the popliteal vessels are affected.

Action of Fluoride of Sodium on Bone.—By feeding young dogs with fluoride of sodium, v. Stubenrauch was able to induce a typical early caries of the teeth, great porosity of the bones of the extremities, but no retardation of growth. In very young rabbits there was retarded growth, caries of the teeth and necrosis of the jaw. As soon as the administration was stopped, the pathological process came to an end.

Carcinoma by Implantation.—According to Petersen, carcinoma cells may become separated from the mother tumor and start a new growth after short or long-continued contact with serous or epithelial surfaces or wounds. A close microscopical examination will often, however, show that inoculation does not take place but that the cells are carried to their new location by retrograde lymphatic transport. Epithelial inoculation is very rare in the same person and still more so from one individual to another. The slow or rapid recurrence of carcinoma is determined by the variety and malignancy of the primary tumor. Jordan has observed a case of recurrence after extirpation of the tongue for carcinoma after 19 years. In another case of mammary carcinoma, a nodule formed 15 years after amputation.

Pneumatic Chamber for Intrathoracic Operations.—The chamber constructed by Sauerbruch enables the operator to overcome the difference between intrabronchial and intrapleural pressure. An attempt was also made to equalize the pressure by increasing the pressure in the air-passages. Thus in animals, the lungs may be inflated from a bronchus and the bronchus then tied off; if the thorax be then opened, the lung will not collapse and a pneumothorax will not set in. For man this procedure is too radical and has not yet been tried, but it is invaluable in physiological experiment. Von Mikulicz emphasizes the ease with which extensive thoracotomies may be performed in the chamber and believes that difficult operations on the heart and intrathoracic esophagus will now be possible. The results on animals were very gratifying, but one patient died of cardiac collapse. The necessary minus pressure should correspond to 12 millimeters mercury. Brauer objects to the cumbersome and expensive chamber of Sauerbruch and has constructed a small box, holding no more than ½-¼ cubic meters of air, which he thinks is equally efficient. The head of the patient to be operated is brought into the box while the anesthetist introduces his hands through rubber cuffs. With the aid of a special apparatus, anesthesia can easily be induced. Petersen has seen animals revive immediately after pulmonary and cardiac collapse, when the pneumatic chamber was employed. The frequent repetition of the experiment seems to be an intense cardiac stimulant. He was able to remove a strip of lung tissue, the seat of a malignant growth starting from the spine, with perfect success, but when the dressing was changed without the pneumatic chamber, pneumothorax and death resulted.

Experiences with Cardiolysis.—During the last year, v. Beck has performed cardiolysis three times with good result. In one case, ascites, congestion of the liver and of the spleen, disappeared after resection of the 4th, 5th and 6th ribs and the boy was discharged absolutely cured. However, his condition during the first three days after operation was miserable. In the two other cases, the pericarditis had also developed after pleurisy and retraction of the thoracic walls was pronounced. It is necessary to remove the periosteum very freely so that the ribs will not reform.

Röntgen Therapy in Carcinoma.—That Röntgen rays have a beneficial influence upon neoplasms is unquestionable, for Perthes reports 12 cures in 13 cases of epithelioma. One carcinoma of the lip was cured after a single sitting of 25 minutes. Growths seated deeper than two-thirds centimeters are not influenced, however. The specific action seems to manifest itself in a cessation of cell-division; this can be experimentally demonstrated on ova or plant cells. Lassar believes that the best results in cancroids are obtained by combining Röntgen therapy with the use of arsenic.

Five New Operations on Liver and Gall-Ducts.—Kehr reports one case of apparent stone in the cysticus which turned out to be an aneurism of the hepatic artery. The sac was extirpated without the development of necrosis in the liver. The old opinion, that the hepatic artery should not be touched surgically, is thus no longer tenable. The second case concerns a tumor of the common and hepatic ducts. Both ducts were resected and the stump of the hepatic duct then fixed to the duodenum. This is the first case of resection of the common duct on record. In the third case hepatico-cholangio-enterostomy was done but the patient died after several weeks. In the fourth case a defect in the duodenum resulted which necessitated complete division of the duodenum, suture of the divided ends and gastro-enterostomy. A fistulous tract resulting from a retention cyst of the pancreas was implanted into the gall-bladder in the last case, and this followed by a gastrocystotomy. The pancreatic juice was well tolerated by the stomach.

New Formation of Gall-Bladder.—Seven months after the gall-bladder had been extirpated in animals, a new-formed reservoir was found by Haberer at the site where the cystic duct was ligated. When the cystic duct was also resected, the hepatic duct formed a slight dilation.

Removal of Stones in the Choledochus.—Kraske emphasizes the difficulties of choledochotomy, especially if the stone is situated in the intestinal end of the duct. It is especially hard to push the stone toward the liver and too energetic efforts may lead to injury and necrosis of the duct or the intestine. A case of this kind observed by the speaker died of inanition five weeks after the operation. It is often better to mobilize the duodenum and incise it. Injuries to the pancreas should be avoided though they are not always dangerous. The pancreas may, however, cause considerable trouble if the stone is situated in the diverticulum of Vater. In a case of this kind the choledochus was divided close to its entrance at the duodenum, to enable the extraction of a large stone. The sutures held for three days; after that the pancreatic juice was excreted in such large amounts that the patient died of inanition. It is questionable whether an accident of this kind can be prevented by drainage of the pancreatic duct; at any rate, drainage from the choledochus without opening the duodenum is simply impossible. In stones of the choledochus, Riedel makes a very large incision from the lower end of the sternum to below the navel. This enables him to pull forward a large portion of the liver and thus gives ready access to the deeper structures. Rehn believes there is a condition which closely simulates aneurism of the hepatic artery; he refers to hemorrhagic infiltration of the gall-bladder. Kausch warns against duodenal incisions and prefers to open the hepaticus, since if the suture does not hold here, the worst accident is a biliary fistula, whereas with a leak from

the duodenum the patient generally dies. The incision of Riedel is not to be recommended, on account of subsequent hernias; an incision following the course of the nerves is to be preferred. Kehr prefers the transduodenal route; he has had only two deaths among 20 cases. If the tampon is introduced some distance from the duodenal wound, there is little danger of decubitus. If the retroduodenal route is chosen, phlegmons are liable to develop.

Injuries of the Hypophysis.—Injury to the pituitary body may be expected after fractures of the base of the skull running through the sella turcica, with foreign bodies which penetrate the hard palate and skull from the mouth and after injuries, gun-shot or stab wounds which start from the convexity. Since most of these cases are fatal, little is known of the symptomatology. Madelung observed a girl nine years old who had been shot in the head; there were unilateral amaurosis, the remains of hemiplegia and an enormous adiposity. The course of the bullet was such that the hypophysis or its surroundings were probably injured.

Stolper remembers a case of pronounced acromegaly after severe fall upon the back of the head. At the autopsy the hypophysis was considerably enlarged and edematous and a metastasis was encountered in the right occipital lobe. Benda thinks that acromegaly is seen more often with hyperplasia of the gland than with a degeneration such as one would expect after a trauma. Experiments on extirpation of the hypophysis conducted by v. Eiselsberg were all unsuccessful, since the animals died soon after operation.

Psychical Disturbances with Abscess of Temporal Lobe.—In a case of temporal brain abscess, Borchard noticed severe psychical disturbances of a sexual nature. After incising the abscess, the symptoms disappeared.

Bone Suture in Subcutaneous Fractures.—In fractures of the elbow-joint and of the head of the radius, where the broken ends were not in apposition, König warmly advocated bone-suture. This also applies to multiple fractures of the same bone, to certain fractures of the neck of the femur which usually do not heal by bony union. In the latter an accurate suture of the capsule and soft parts is also necessary. This operation will be followed by good results even in advanced age.

Osteoplastic Repair of the Entire Diaphysis.—In a young girl, the entire diaphysis of the femur was removed for myelosarcoma. Friedrich replaced the defect by a portion of the tibia of an older child and achieved excellent functional results. In another similar case, the femur of a patient who had died of cancer of the stomach, was implanted with equal success. The implanted bone merely acts as a framework, permitting the newformed osseus tissue from the epiphysis to grow in the proper direction. The bone need not always be fresh but should be thoroughly boiled out and kept in sterile saline solution.

Early Operation in Renal Tuberculosis.—In forty-eight cases operated on by Kümmel, a primary focus was generally discovered somewhere in the body. In vesical tuberculosis a kidney was found diseased and removal of this organ cured the bladder condition. In the early stage, there are neither subjective nor objective symptoms, especially no pain or tumor, but at most a slight cystitis with turbid urine. The diagnosis is here made by ureteral catheterization. Every cystitis in the female is suspicious of tuberculosis if trauma and catheterization can be ruled out. The use of methylene blue injections as an aid to diagnosis is a valuable addition. It is a mistake to consider the modern methods of functional diagnosis as superfluous and difficult. Kronlein gives a report of 51 cases which constituted 30 per cent. of all his renal cases. The female is more predisposed owing to the frequency of cystitis and retention in the real pelvis. Seventy-two per cent. occurred in the third and fourth decade and in 92 per cent. the disease was unilateral. Functional renal diagnosis, though a valuable aid, does not always disclose the condition of the second kidney. Nephrotomy or resection is rarely sufficient; in most instances a nephrotomy is the only operation which gives hopes of permanent cure. Several classes of cases are recognized, such as suppurative and caseous tuberculosis, the diffuse form, the tuberous variety with unfavorable prognosis, and lastly the emholic form. In the latter the diagnosis can sometimes be made, as in the case of a tuberculous man, who suddenly experienced severe pains in the kidney region, gradually increasing in intensity. The speaker believes with others, that all cases of renal tuberculosis are hematogenous in origin. In the 34 cases, the kidneys were affected alone in 12; the lungs were diseased nine times, the bladder twelve times, a joint nine times and four times the entire urogenital apparatus. Twenty-four cases survived the operation longer than eight months; of the remainder, tuberculous lesions in the other kidney were found in only three.

New Operation for Chronic Nephritis.—The weak point of Edebohl's operation lies according to Babes in the reposition of the denuded organ into its non-vascular, fatty capsule, so that the chances for collateral circulation are very poor. The following methods have been tried on animals and are recommended as superior: 1. Covering the decorticated organ with omentum. 2. Intraperitoneal dislocation. The first method was tried once in the operating room but unfortunately the patient succumbed to a pneumonia.

Experience with Decortication.—P. Rosenstein, of Israel's clinic, thinks that Edebohl's operation is not only without result but actually dangerous in severe cases of nephritis. Edebohl's statistics do not bear severe criticism and his unilateral cases are certainly not unilateral. Israel himself has never seen a permanent cure. Stern, Riedel, Kümmel and Franke have had the same experience.

Increasing the Resistance of the Peritoneum Against Infection.—There seems little doubt that by increasing the number of leucocytes, a higher resistance on the part of the peritoneum against infections can be obtained. Von Mikulicz therefore injects a two per cent. solution of nucleic acid twelve hours before the operation since a hypoleucocytosis precedes the hyperleucocytosis. The course of the disease after operation seemed more favorable than without injection. The leucocytes are also increased by thoroughly flushing out the peritoneal cavity with a hot saline solution—a method which is certainly preferable to the dry way of operating.

Pathogenicity of Intestinal Contents.—Brunner finds that the contents of the lower portion of the gut are much more infectious than the upper and the contents of the vermiform appendix seem to be especially virulent. In the majority of cases the streptococcus was found.

Position for Peritonitis.—In purulent peritonitis, Küster rests his patients with a roll under the chest and pelvis and a support for the head, so that the arms remain freely movable.

Subcutaneous Feeding in Surgery.—In inflammatory processes of the peritoneum and in protracted vomiting it is often impossible to feed the patient in the normal way and subcutaneous feeding, if efficient, would be life-saving. Friedrich has had excellent results with sterilized olive oil up to 100 grammes daily and with 40 to 100 grammes of glucose in three to five per cent.

solution. A higher concentration is not deemed advisible since the injections are very painful and the solutions are no longer isotonic with the blood. Recently, various proteids were again tried. Only an absolutely pure pepsin-peptone seemed serviceable since it did not affect pulse, temperature or blood pressure and in doses of 20 grammes daily, did not appear in the urine. It is the best injected in seven per cent. solution, combined with salt and glucose. Many cases of peritonitis, gastric and intestinal perforation could be tided over the critical period by means of these injections.

Volvulus in the Stomach.—It is hardly recognized that the stomach may undergo torsion like the intestines. Borchard even speaks of two varieties: intracolic volvulus, where the colon participates, and supracolic volvulus, where the stomach alone is affected. Suggestive signs are meteorism involving only the epigastrium, singultus and negative result after examining with sounds. The therapy is very simple: the stomach must be brought back into the normal position, after its volume has been reduced by incision.

Glycogen Reaction of Leucocytes.—The demonstration of glycogen granules in leucocytes by means of the iodine reaction seems to have no diagnostic value except in tuberculosis where the pure forms can be easily distinguished from the mixed infections. However, Küttner thinks that the prognosis may be regarded as very poor if the reaction is strong, even where the number of leucocytes is not above normal.

Proper Time to Operate for Appendicitis.—Karewski believes that all cases of acute appendicitis result from chronic processes which have been going on in the interior of the appendix for a long time. Operation is indicated in all cases in which a chronic intestinal catarrh is in all probability of appendicular origin and internal treatment does not cure. The first acute attack also calls for the knife, since one can never know how long the process has been going on.

Bladder Trouble in Anilin-Workers.—The great frequency of tumors of the bladder is pointed out by Rehn. Twenty-one cases have come under his observation since 1895, of these three were benign and eighteen malignant. The patients had been employed in the factory from five to twenty-nine years. The prognosis is very unfavorable.

Treatment of Hernias.—In many hernias the relation of parts is so disturbed that it is absolutely impossible to bring the intestines back into the abdomen without prolonging the operation and seriously endangering the patient's life. Madelung thinks that the only remedy in these cases is a fecal fistula with exclusion of small or large pieces of the intestines. In small hernias in children and in adults who refuse radical operation Brodnitz has often seen good results from injections of alcohol.

Ileus of Syphilitic Origin.—Borchard reports a rare case of intestinal obstruction caused by a recent syphilitic tumor at the splenic flexure. The affection was recognized as specific during the operation so that an artificial anus was made and the patient subjected to antiluetic treatment. The cure was perfect and the patient is now free from symptoms.

Cancer of the Stomach and Rectum.—A pathological examination of cancers of the stomach and rectum should always be ordered even when the question of malignancy has been settled, since certain types will always recur, while others will give a fair chance of cure. Petersen then discusses the way these growths extend into the surrounding tissues; in the stomach the lesser curvature is most often affected but the duodenum is by no means immune since its beginning was found involved in no less than 30 per cent. In recurrences, the stomach plays the most imporant part, since recurrences from glands are less common. The opposite holds in the rectum where recurrences are most common in the cellular tissue and the regional glands.

JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY

Regular Meeting held May 16, 1904.

Blood in Pregnancy.—Some recent work on the blood in pregnancy, done in the obstetrical ward of the Johns Hopkins Hospital, was reported by Dr. Thompson. The subject has received a good deal of attention, since the time of Morgagni, but the attention has been confined largely to fruitless discussion. Three conditions have been reported as found; either (1) no change; (2) an increase in the red blood cells and diminution of the hemoglobin; or (3) an increase in hemoglobin and diminution in the red blood cells. Many also have held that the blood condition depends on the general condition and not on the presence of pregnancy. A leucocytosis has often been observed and has been explained as due to a local irritation—a higher count having been found in the blood from the cervix than in that from the thumb. Virchow thought a change in the pelvic lymphatics probably explained the phenomenon, and other observers have connected it with the breast changes where a round-cell infiltration occurs. A fall in specific gravity corresponding to the drop in red blood cells has also been observed. The twelve cases studied and here reported were all negroes but one. All were well and were kept on the same diet. They were followed from October, 1903, to May, 1904, each being examined completely once a month. The red cells were found to be high at the extremes of pregnancy—and an irregular rise as pregnancy comes on was noted. The hemoglobin was low until the seventh month, but at the ninth month averaged 85 per cent. There was a slight absolute leucocytosis, the average count being 9,000. Ehrlich's stain showed practically normal proportions of the different species of leucocytes. The specific gravity was found to be high early in pregnancy, diminishing later, again to rise toward the end. Possibly the changes in the water output, pointed out by Slemmons, may explain this phenomenon. Dr. Emerson, in complimenting the author of this paper on his results, said that what was needed in blood work was not a study of many cases but of a few cases carefully observed and Dr. Thompson's work on the specific gravity of the blood was of particular interest.

Benign Bone Cyst.—Dr. Halsted reported a case of benign bone cyst. The patient, a boy of seven years, had had a fall five years before admission, which had rendered him unconscious and "broken" his left thigh below the trochanter. Three weeks afterward he was walking with a crutch. Some time later the leg was wrenched, the thigh became swollen at its middle, and motion became impaired. There was no crepitus, false motion, or tenderness. Skiagraph showed a swelling reaching up to the head of the femur, having the characteristics of a cyst. Operation was done and a cyst filled with brownish fluid found. The new growth invaded the medullary canal, but was evidently benign and the leg was not amputated, the tumor being excised and the head of the bone enucleated. Pathological examination showed the specimen to contain a good deal of cartilage with several small and one large cyst. Strictly, it was a fibroma though microscopically it looked a good deal like a sarcoma. Islands of misplaced cartilage, as Virchow said, often produce cysts; and if it is remem-

bered how active resorption is in the young the origin of such a tumor is easy to understand.

Gastrectomy.—Dr. Bloodgood reported an operation of this kind, done for an early ulcer or cancer. The patient, a man of thirty years, complained of pain in the epigastrium not confined to one side or the other, but situated in the middle portions and about under the ensiform. There was no rigidity, muscle spasm or tenderness. Operation was done, some inflammatory infiltration of the omental fat found, enlarged glands palpated on the the lesser curvature and a gastrectomy by Billroth's first method done. Recovery was uneventful and the patient is now well. The specimen showed an ulcerated patch on the stomach wall. Dr. Bloodgood said that the statistics of the surgery of carcinoma of the stomach showed conclusively that the cases must be seen earlier if anything is to be accomplished.

Dr. Halsted reported a similar case on which he had recently operated. In this case there was an ulcer palpable through the abdominal wall and the patient had been shown to the students as a most typical case of gastric ulcer. At operation enlarged glands were found on the greater curvature and these were, on section, carcinomatous. Gastrectomy for cancer was done by Billroth's second method. The man is now well, his weight has increased 30 pounds and he eats everything. Dr. Emerson, referring to the chemistry of the gastric secretion in early cases of cancer, said that when a cancer grows on an ulcer the hydrochloric acid varies greatly in amount from day to day, and this fact may be of assistance in early cases.

Pulmonary Distomiasis.—Dr. Emerson, referring to the specimens which he exhibited of the first case of pulmonary distomiasis to be reported in this country, gave a slight account of this condition. The disease occurs with great frequency in Japan, Formosa and elsewhere. The chief, if not the only, symptom is hemoptysis with final death from anemia. Between the hemorrhages the sputum remains rusty. This case shows the value of fresh sputum examination.

MEDICAL AND CHIRURGICAL SOCIETY OF MARYLAND.

Stated Meeting, held May 20, 1904.

Skin Lesions.—Dr. Carey Gamble showed a patient exhibiting skin lesions in connection with visceral crises. The patient was a German, forty-seven years old, who had had smallpox when twelve years of age; no rheumatism and an otherwise negative past and family history. He had, however, had between his ninth and his eighteenth years several attacks characterized by great abdominal pain, distention, vomiting and delirium. The pain usually lasted for four weeks and the delirium occurred on and off during that time. There were no skin eruptions. At eighteen he entered the army and since then had had no illness up to admission except a left-sided pneumonia in 1901. In April he was taken with a dry cough, pain in the right chest and swelling of the right arm. A hemorrhagic rash appeared over the body, there were suppression of the breath sounds, a few râles and kodiac resonance in the right axillary line. Urine was negative. A little later he was taken with great pain in arm and shoulders, vomiting and epigastric pain. The gums became spongy, there was distention of the right side of the abdomen and the patient lost perfect control of the bladder. Albumin, casts and some blood appeared in the urine. There were pains over the heart. The hemorrhagic spots in the back became necrotic and sloughed out, leaving areas of ulceration. The onset of this case was much like appendicitis, but an exploratory operation was not done since the rash had previously appeared, and because the patient was weak and of an obvious hemorrhagic diathesis surgical treatment was thought unwise. The condition present was that described recently by Osler, who called attention to the group of cases characterized by skin lesions in association with visceral crises.

Dysentery.—Dr. Knox reported a study of 110 cases of dysentery seen at the Mount Wilson Sanitarium. He called attention to the various theories which have been advanced to explain this disease and emphasized the absolutely fanciful nature of "miasms," "summer flukes" and "infectious states of the atmosphere," etc. More accurate knowledge of summer diarrhea has led to a more rational treatment; but the results of Shiga's serum at the Mount Wilson Sanitarium, though not absolutely negative, have been disappointing and prophylaxis seems to offer most. Of the cases studied 83 were under one year and only six over two years old. Most of the cases occurred in July and there was always a sudden increase after a period of excessive heat. Ten per cent. of the children were breast-fed and 24 per cent. had taken condensed milk—significant figures from the standpoint of etiology. The hygienic surroundings of none were ideal. In only four cases were there other children with the disease in the same house. The dysentery bacillus, though never isolated from water, may be carried by it just as the typhoid bacillus which, though impossible to find in water, is carried in that way. Many of the breast-fed and condensed-milk-fed babies in this series had been given unboiled water, and this may have been the source of the infection. The prognosis, as given by a study of the mortality of Dr. Knox's cases, is good after the first year, previous to which time practically all the deaths occur.

Posttyphoidal Psychoses.—Dr. Edsall read a paper on the posttyphoidal psychoses in children. He referred to the great vagueness in the literature as to this subject, the only comprehensive work attempted having been that done by Paris students for their theses. The frequency of this condition, the character of the psychosis and the prognosis are the points of especial interest. As to frequency, the idea among clinicians of its great rarity is an erroneous one—80 cases being easily found in the literature. As to character, it is commonly stated that it is a mania, but Dr. Edsall found in his 80 cases 40 of mania, 18 of dementia and 22 of melancholia. A girl of nine years in his practice with a severe typhoid and living on low diet because of hemorrhages developed delusions and symptoms of meningitis for which lumbar puncture was done. She recovered from the fever, but was left with a psychosis characterized by irrelevant fears, delusions of sight and hearing, exaggerated religious emotion, double personality. Her condition gradually improved. She is now quiet and reflective but otherwise well. As to prognosis, the clinicians usually say that the case will recover, the psychiatrists that it will not. In this series most of the melancholias got well, but 20 out of 65 cases remained persistently insane—the majority being demented. Dr. Edsall feeds his cases well whenever mental symptoms occur, as a prophylaxis against dangerous psychosis. Dr. Mitchell thought there might be some relation between the period of starvation and the incidence of insanity and suggested that studies in metabolism might throw some light on the condition. Possibly sex might be an etiological factor. He reported having seen hysterical attacks after typhoid (aphonia, paralysis, blindness, etc.).

Dr. Reuling said that dementia precox frequently

follows typhoid and every slight psychosis should be carefully watched.

Dr. Futcher called attention to the frequency of a neuropathic family history in the adult cases and suggested that this might be found also in children.

Dr. Edsall said that no relation could be shown between the severity of the disease and the incidence of a psychosis, and that more boys than girls are affected —contrary to what we should expect. The influence of heredity has not been carefully studied, but Morel reported a series of eight children from one family, all developing typhoid followed by persistent psychoses. Four of these were maniacal and four demented.

CHICAGO SURGICAL SOCIETY.

Stated Meeting held May 2, 1904.

Carcinoma of the Cheek.—Dr. Nicholas Senn reported a case of extensive carcinoma involving the left cheek, in the center of which was a perforation which communicated with the cavity of the mouth. Acting upon the supposition that it might be a case of abscess, he decided, first, to curettage, hoping to improve the local condition as well as giving an opportunity to make an early diagnosis by the aid of the microscope. Sections under the microscope showed it to be a case of unusually malignant form of carcinoma that had its starting-point somewhere about the alveolar process on the left side, involved the entire cheek, and gave rise to extensive destruction. There was extensive regional dissemination, although the disease had lasted only three months. A radical operation was resorted to. The entire cheek was removed, leaving the angle of the mouth and a small portion of the cutaneous covering of the cheek. He sacrificed the periosteal covering of the jaw on the corresponding side, and made regional dissection by removing the submaxillary gland with the chain of lymphatics, as a preliminary to excision of the cheek, and covered the enormous defect which was produced by a plastic operation, using Thiersch's skin grafts. The wound healed by primary intention throughout.

Multiple Tuberculous Abscesses.—Dr. Senn reported a case of tuberculosis of the ribs, of a most pronounced type, in a man of forty years of age. Three large tuberculous abscesses involved the left side of the chest. One of these ruptured spontaneously, and a fistulous opening communicated near the nipple with a very large abscess cavity. Another abscess was found at the junction of the ribs with the cartilage near the sternum, and another to the left of the mammary line. The third, fourth and fifth ribs were the seat of tuberculosis. The first abscess was the result of tuberculous perichondritis. The focus of tuberculosis of the fourth rib was almost directly over the pericardium close to the nipple. The third abscess was a little to the left and involved the fifth rib. The ribs were resected in their entirety, necessitating an extensive operation.

Acute Osteomyelitis.—Dr. Senn showed a patient for the purpose of making a few remarks in reference to the clinical behavior of certain forms of acute osteomyelitis.

Cysts of the Ductus Thyroglossus.—Dr. Senn had encountered three cases in two weeks of cysts of the ductus thyroglossus. The patients were all young subjects, eighteen to twenty-five years of age, two females and one male. The cysts were comparatively small. The largest one was about the size of a small walnut. They were located in the median line between the thyroid cartilage and the base of the hyoid bone. The enlargement was slow, accompanied by pain and swelling. The skin was movable over the surface of the swelling in all of the cases. Fluctuation was distinct. Complete excision was resorted to. The cyst wall in one of the cases was as thin as tissue paper.

Fibroma of the Periosteum.—In the last ten days Dr. Senn said he had encountered two cases of fibroma of the periosteum. In the first case the fibroma had its starting-point from the periosteum of the second rib close to the cartilage. The tumor extended over the surrounding bony framework in mushroom-like manner, and underneath the clavicle. The tumor was removed through a curved incision, with its convexity directed upward, and the flap reflected as far as the clavicle, thus laying bare freely the base of the tumor, which he found intimately attached to the periosteum of the second rib near the sternum. The tumor was very firm and smooth, and on making a section it cut almost like cartilage. He removed a second fibroma of the ribs last Friday from a woman thirty years of age, which was situated at the lower part of the scapula. The patient first noticed the tumor eighteen years ago. It became stationary, but later gave rise to serious functional disturbance by fixation of the arm. The tumor was removed.

Verruca Senilis.—Dr. Senn exhibited two specimens from the face of a woman, seventy-one years of age, the subject of multiple senile warts. In both cases the disease involved the malar prominence on both sides. There were a number of these warts scattered all over the face, those over the malar eminence being the seat of repeated irrigations, and had undergone transformation into epithelioma.

Myositis Ossificans.—Valuable as the X-ray is as a diagnostic resource, Dr. Senn said occasionally it leads physicians into difficulties. He related a case briefly in confirmation of the correctness of this assertion. The patient was a colleague upon whom he had operated twice before, once for a diffuse septic inflammation involving the right arm and forearm, and a second time for appendicitis. For a number of months he had complained of a vague pain in the right shoulder. The patient regarded it as a rheumatic affection. Local and general treatment failed to give relief. The pain increased in severity, and the shoulder-joint almost completely lost its function. Dr. Senn could find no indication of any swelling, but found at a point corresponding to about the middle of the base of the deltoid a limited area of tenderness. The X-ray picture showed in the center of the deltoid muscle a dark elongated spot. The shoulder-joint itself was normal. He thought he would make no mistake if he considered the case on the face of the photograph one of myositis ossificans. He thought the dark island represented bone tissue in the deltoid, as it appeared entirely separate from the greater tuberosity of the humerus. Upon this supposition he acted. He laid the deltoid muscle bare by a curved incision, reflected the flap upward, and found the deltoid absolutely normal. In palpating the deltoid he found at a point corresponding to the outer side of the bicipital groove of the greater tuberosity a hard swelling. He separated the deltoid vertically by the use of a director and came down to a hard mass, not bone, but underneath the periosteum it appeared to be encapsulated. He incised and exposed a large mass of inorganic salt-sodium biurate. Dr. Senn also reported two cases of lipoma arborescens. He also exhibited the new army splint devised by Howard W. Beale, and a combined stretcher and splint devised by Professor Stokes.

The Union of Ununited Fractures of the Neck of the Femur by Open Operation.—Dr. Leonard Freeman, of Denver, Colo., read a paper, by invitation, on this subject. He went at length into the literature of this subject, after which he reported a case of his own in a heavy, muscular man, thirty-two years of age, who had injured the right hip by falling on it in 1903. Pa-

tient was up on crutches in about four weeks, the extent of the injury not having been recognized. When he saw him on September 23, 1903, about four months after the injury, the patient was still unable to use the limb in walking, owing to pain in the hip and knee. There was shortening of two and a half inches, with a corresponding elevation of the trochanter, although this could easily be overcome by traction, the manipulation being accompanied by indistinct crepitus. Operation was performed October 10, 1903, about five months after the injury. Anterior longitudinal incision was made external to the sartorius, through which the neck of the femur was readily exposed, and the fracture located near the end of the bone. With difficulty a mass of tough fibrous tissue was snipped with scissors, between the ends of the fragments, which were freshened on each side of the gap with a chisel. A small incision was then made over the trochanter externally, and a hole for the reception of the screw drilled through the base of the trochanter, the external fragment of the neck, and into the head of the bone. The drilling proved to be a mere form, for the bones were so soft that the blunt screw could have been pushed directly through it without the boring of a preliminary hole. When the screw was in place, its outer end projected between the stitches used in closing the wound. Owing to the softness of the bone, the parts, although receiving considerable support, were far from being firmly held, so that it was possible to displace them with moderate force by rotating the limb or pushing it upward. On account of oozing, it was necessary to pack the wound with a strip of gauze, which was removed in a day or two, the opening closed, and primary union obtained. Extension, a long side splint, and a pad beneath the trochanter were employed. For several days the suffering was great, necessitating the constant use of morphine. In a week or so a little infection appeared about the opening through which projected the screw, which at the end of about two weeks caused a rise in temperature to nearly 100° F, accompanied by chills and much general disturbance. On removal of the screw these unfavorable symptoms promptly subsided, showing that they were probably due to infection of the cancellous structure rather than the joint. The subsequent recovery was rapid and uninterrupted. There was about one inch shortening. In the face of various tests, the union seemed to be sound and bony. He examined the patient again, a little over six months after the operation, and found the following condition: Union apparently firm, considerable callus, flexion to nearly a right angle, rotation almost normal, and about one and a half inch shortening. There was still enough pain in the joint anteriorly to prevent the patient discarding his crutches, although it was much less than before the operation, and was decreasing constantly. When not atempting to walk, the weight could be borne upon the limb with but little, if any, discomfort. Up to the present time the case had not been a complete success, the result being marked improvement only. What the ultimate outcome would be was yet to be ascertained.

Dr. Nicholas Senn questioned whether Dr. Freeman had reached an ideal result in his case. In the years 1882 and 1883, the speaker studied this question scientifically. Up to that time it was doubted whether union by bone under any circumstances could be obtained in cases of intracapsular fracture of the neck of the femur. He produced this fracture on the lower animals by drilling the neck of the femur in different directions and fracturing it, satisfying himself in each instance that he had produced a fracture inside the capsule. He treated twenty-three of the animals thus experimented upon by the methods then in vogue, but in all of these cases he failed. He then resorted to direct methods of fixation. Breaking the bone in a similar manner, he made use of ivory bone pegs and metallic nails. In ten experiments following the twenty-three failures he demonstrated that he had obtained bony union in nearly all of them. He found afterward that the same results in the human subject were obtainable by indirect methods of fixation by bringing the fractured surfaces in contact and holding them in apposition by lateral pressure by a splint of his own device. He had treated since that time fifteen or twenty cases, and in the majority of them could not only demonstrate excellent functional results, but union by bony consolidation.

Dr. Arthur Dean Bevan spoke of fracture of the neck of the humerus, and reported three cases upon which he had operated. In these he had made the open operation, wired the fragments, or had resected the head of the bone. He had one case of infection, which resulted in the loss of function of the shoulder-joint temporarily, and endangered the life of the patient for weeks. In the other two cases he obtained union by primary intention, and the results were satisfactory.

Dr. A. J. Ochsner had followed the method of treatment described by Dr. Ruth, in a paper read before the American Medical Association, in sixteen cases, two of which died. There was union in all of them. The amount of shortening in all of them was less than three centimeters. He had made the open operation in one case only of ununited fracture with painful hip. He used two Parkhill screws through the neck and the head, but the result was not satisfactory, as it was necessary suqsequently to remove the head.

Dr. Alexander Hugh Ferguson had treated three cases of ununited fractures of the head of the femur by the open operation with very good results.

Dr. Freeman, in closing, agreed with the speakers that in recent fracture of the neck of the femur the open operation should be avoided. He did not think there was as much danger attending the open operation from infection as Dr. Senn had intimated. Parkhill had used his clamp in fifteen or twenty cases without bad results. Infection, when it occurred, was along the tract of the screw into the cancellous tissue, and in his own case as soon as the screw was removed the infection subsided.

NORTHWEST MEDICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, held April 26, 1904.

The President, Hugh Hanna, M.D., in the Chair.

Internal and External Hemorrhoids was the title of a paper read by Dr. Lewis H. Adler, Jr., in which he urged the necessity for careful ocular and digital examination of all cases suspicious of rectal trouble. He divided, external hemorrhoids into (1) venous, (2) cutaneous, and (3) compound. The first variety being again subdivided into three forms (*a*) a marked varicose condition of the plexus of the external hemorrhoidal veins; (*b*) a thrombosis of the plexus; and (*c*) a clot of extravasated blood due to rupture of a varicose vessel. The internal variety he considered under the forms of (1) varicose, (2) capillary, and (3) compound. In regard to the treatment of external hemorrhoids he noted the fact that it is usually only when the tumors are inflamed that the patient will seek medical advice, and believed the best method of treatment to be operative, if the patient will submit thereto, which may be accomplished (1) by excision, (2) by simple incision, and (3) by excision and primary suture of the cutaneous edges of the primary wound. He stated that excision was the method most frequently employed, which he described in detail, advising that

the hair be not shaven; and recommending the anesthetization of the tumor by a two per cent. solution of hydrochlorate of cocaine injected hypodermatically. Operation by simple incision was also fully considered and the chief objection thereto thought to be that the skin distention occasioned by the inflamed pile is left, and may subsequently become inflamed or refill with blood.

The advantage of simple excision and primary suture of the resulting wound has the advantage hope of obtaining primary union, but the author stated that he had abandoned it because of the liability of infection of the suture tracks, and because he believed the annoyance to be considerably increased by the mechanical presence of the sutures over what it was if the wound was left to heal by granulations. The palliative treatment consists of keeping the parts thoroughly clean by bathing with hot water and the application of soothing and astringent lotions during the inflammatory period, together with careful regulation of the bowels, diet and rest in bed. The treatment of internal hemorrhoids he divided into (*a*) preventive, (*b*) palliative and (*c*) operative. The capillary pile he believed could be best treated by the electrothermic cautery; while he believed that the nitric acid treatment was also worthy of mention. The preventive treatment consists to a large extent in the avoidance of sedentary habits, the use of improper toilet paper (such as newspaper, printer's ink being a decided irritant), excessive venery, improper diet; constipation, and the use of drastic purgative medicines. The palliative treatment should be with a view to (1) the reduction of any inflammation, (2) the arrest of hemorrhage, and (3) the prevention of prolapse of tumors. It includes the various details mentioned under preventive treatment, and in the early stages relief will often be produced by sponging the parts with cold water and in some instances an injection of cold or ice water after a stool. He also considered in detail the formula of Dr. S. G. Gant for the relief of inflamed hemorrhoids and that of Dr. James P. Tuttle for the relief of bleeding. He considered in detail the various operative procedures of divulsion, injection, ligature, clamp and cautery and Whitehead's, stating that he preferred the clamp and cautery method for the reasons that the patients suffer less pain; that recovery is quicker and that the constitutional effects are less.

Diagnosis and Treatment of Fistula in Ano.—This was the paper of Dr. J. Coles Brick, in which he referred to the fact that out of 16,060 treated in St. Mark's Hospital, London, between 1872 and 1891, a large number were of some form of fistula in ano. The consensus of opinion seems to be that fistula in ano is almost invariably secondary to abscess, although congenital cases may exist occasionally. He referred to the cases of this character reported by Dr. Kurt Bartholdy (*Arch. f. klin. Chir.*, LXVI., p. 956, 1902), and also described in detail three cases of suppurating dermoid cyst between the rectum and sacrum reported by Serein (*Med. Obosrenje*, January, 1901), causing this condition and the anorectal sinus of Hermann. As the great proportion of fistulas whose internal openings have been found are at the mucocutaneous junction, he believed a plausible cause to be injury by hard fecal masses to the delicate mucosa at this point and the possible introduction of septic micro-organisms into the lymphatics or Hermann's sinus and then conveyed into the ischiorectal fossa or in some cases higher up in the rectum. No sex or age is free from the disease, although the male during middle life is the most frequent sufferer. Allyngham reports that 14 per cent. of his cases of fistula were tuberculous, although many cases have been seen in which there was no indication of tuberculous ulcer. The primary influence of syphilis is through an ulcerative process. The writer referred to a case in which after curettment and packing of the fistulous tract, granulations did not form. The husband had a specific history and after giving specific treatment the wound began to be more pink, healthy granulations formed and it closed perfectly. He laid stress upon the importance of carefully deciding the etiology of the disease; whether tuberculous or specific, superficial or of deep origin. He referred to the general classification as complete and incomplete, internal and external, and described in detail the method of examination for each variety, laying particular stress upon the importance of a good light and recommending that the patient be placed in the Sim's position with the buttocks slightly elevated by means of a small pillow. Most patients dread such an examination and it should be done with as little pain as possible. A swab of cotton wet in a 10 per cent. to a 20 per cent. solution of cocaine should be introduced into the anus and allowed to remain there a short time, after which the index finger should be introduced and gradual dilatation accomplished. The treatment may be either palliative or operative; the palliative treatment rarely effecting a cure, but simply relieving the condition. In blind external fistula in which the pus is watery, it is the safest, but if there is much induration, burrowing will continue and the longer the fistula is left the more difficult it is to cure. He referred to the methods of Allyngham, who reports the cure of 17 cases by the use locally of strong solutions of carbolic acid and iodine or chromic acid. Matthews uses the fistulatome, by means of which the fistulous tract is scarified, but he nevertheless prefers the knife; and De Vevey, who uses tri-weekly injections of a 2 to 2½ per cent. of copper acetate solution, keeps the patient in a reclining position, and also administers guaiacol and small doses of copper acetate internally. Of the operative methods of procedure, excision is the most in use to-day, although elastic ligature, electrolysis and ecraseur all have their advocates. Whatever operation is done the patient should be carefully prepared therefor. Free catharsis should be had one and one-half to two days before the operation; a laxative pill should be given the night before and the patient put on a liquid diet. Early on the morning of the operation an enema of hot soapsuds should be given, in order to clear the file of operation from fecal matter. In cases of lung involvement ether should not be used. The bowels should be kept confined for five or six days after the operation, after which an enema of oxgall, glycerin and water may be given, if required. He laid especial stress upon the importance of after treatment, and the cases should be watched until all granulations have disappeared. When the bowels are to be confined for four or five days a rubber tube covered with gauze should be inserted in order to allow the escape of gas.

Dr. Andrew J. Downs stated that he favored the clamp and cautery operation, who stated that he had performed all the various methods for the removal of hemorrhoids, with the exception of the Whitehead operation, which he believed to be disadvantaged by the fact of its length and also by the fact that it was more apt to transmit infection; the operation which was less likely to cause the latter complication being the clamp and cautery, which he does by means of the electrothermic angiotribe, which instrument combined the simultaneous application of heat and pressure, the current being supplied either from a motor or storage battery. He described in detail the instrument and operation and stated that in the last three cases he had left

the button, of tissue, as it acted as an extra sealing, if there was any tendency for the ribband to open. He referred to two cases in which he had recently performed the operation, one case having previously had a difficult hysterectomy, and the other an operation for appendicitis, both of whom stated that they experienced no pain during the operation. The operation can be quickly performed, the speaker stating that he had frequently performed it in eight minutes. In reference to fistula, he believed that the sphincter should be preserved, if possible.

Dr. Wilmer Krusen referred to the importance of carefully examining into the pelvic conditions of women in whom operations for rectal conditions were performed, believing that in many instances the healing was interfered with by some pelvic condition, such as a retroflexed uterus or a pelvic tumor.

Dr. T. Turner Thomas referred to an article which had recently appeared in the *Boston Medical and Surgical Journal*, in which the writer reported 150 cases of the Whitehead operation with no deaths and with only five strictures, the time of the operation varying from five to twenty minutes, with an average of 12½ minutes.

Dr. C. Hershey Thomas reported three case of fistula without any internal opening, all of which healed up very nicely without making any.

Dr. Lewis H. Adler, Jr., in closing, stated that he believed the danger of stricture from cutting the sphincter was an overrated one; and that he had never had a single case of long continued incontinence in any case on which he had operated. He stated that he did not believe too strong solutions of cocaine should he used, as the absorptive powers of the rectum are very high, and that he always used a two per cent. solution. In regard to tuberculous fistula, he stated that there were many cases occurring in tuberculous subjects, in which the abscess was not tuberculous, and that from an investigation he had recently been making he believed that the instances of tuberculous abscess were quite limited. In any event he did not feel that it made much difference if an excision was done.

Dr. J. Coles Brick, in closing, emphasized the value of carefully looking into the pelvic condition, and both relieved if necessary. He believed that a suture inserted at the time of the operation was very valuable, if the patient was so situated that careful attention could be paid to him. In regard to the carbolic acid, he stated that it acted as a germicide and mild irritant. In regard to the use of cocaine, he referred to the case of a man who had by the urethral use of it been overcome; and that he never gave a stronger solution than two per cent. by injection and usually one-half.

BOOK REVIEWS.

The Summer Diarrheas of Infants, Their Etiology, Pathology and Treatment. By H. Illoway, M.D. E. R. Pelton, New York.

Dr. Illoway's little book is likely to be of special service during the heated term, because it insists on the fact that the predisposition to the infectious conditions known as summer diarrheas is really a form of themic fever consequent upon the lack of resistance of the child to continued high temperatures. His very practical suggestion is that children should be kept cool by bathing, by the removal of clothing and as far as possible by keeping them out in the open air but in the shade. Other features of summer diarrheas are also suggestively touched, and the book will be useful for those who have many city children to care for during the hot weather.

Tuberculosis and Acute General Military Tuberculosis. By Dr. G. Cornet, of Berlin. Edited, with additions, by Walter James, M.D., Professor of the Practice of Medicine in the College of Physicians and Surgeons (Columbia University), New York. W. B. Saunders & Company, Philadelphia, New York, London.

There is probably no more complete treatise on the general subject of tuberculosis in any language and certainly none in English anything like as complete and so thoroughly up to date as this volume of the Nothnagel series. Professor Cornet's work has well been called exhaustive. The American editor has added not a little of value from the recent literature to what was already an extremely satisfactory treatment of an extensive and difficult subject. Besides new material has been incorporated from some recent standpoints with regard to tuberculosis. For instance, the chemistry of the tubercle bacillus and of changes of media which favor its growth have in recent years occupied much attention and this subject is treated very fully in this volume by Dr. E. R. Baldwin, of Saranac Lake.

At the present time tuberculosis has come to occupy a very prominent place in the mind of the general practitioner of medicine. This is mainly due to the fact that the disease is no longer considered either hereditary and therefore not preventable nor necessarily fatal and therefore hopeless of treatment.

In the present volume the long chapters on the prophylaxis and the therapy of pulmonary tuberculosis are full of practical suggestions that cannot fail to be of the greatest help. Everything new and old has been discussed in the matter of treatment and the conclusion lies in favor of the open air, abundant diet regime shown to be the only rational basis for successful phthisiotherapy.

BOOKS RECEIVED.

International Clinics. Fourteenth series. Volume I. Edited by A. O. J. Kelly. 304 pages. Illustrated. J. B. Lippincott & Co., Philadelphia.

Materia Medica for Nurses. By Emily A. M. Stoney. Second edition. 12mo, 300 pages. W. B. Saunders & Co., Philadelphia, New York and London.

Epilepsy and Its Treatment. By Dr. Wm. P. Spratling. 8vo, 522 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

Progressive Medicine. Volume II. Edited by Dr. Hobart Amory Hare. 8vo, 334 pages. Illustrated. Lea Brothers & Co., Philadelphia and New York.

Diseases of the Nose and Throat. By Dr. D. Braden Kyle. Third edition. 8vo, 669 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

Medical Diagnosis. By Dr. Wilhelm v. Leube. Translated and edited by Dr. J. L. Salinger. 8vo, 1,058 pages. Illustrated. D. Appleton & Co., New York and London.

Diseases of Metabolism and Nutrition. By Dr. Carl von Noorden and Carl Dapper. Translated by Dr. Boardman Reed. 8vo, 89 pages. E. B. Treat & Co., New York.

Obstetric and Gynologic Nursing. By Dr. Edward P. Davis. Second edition. 12mo, 402 pages. Illustrated. W. H. Saunders & Co., Philadelphia, New York and London.

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ORIGINAL ARTICLES.

CONSERVATISM IN OTOLOGY.[1]

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DURING my term of service as house surgeon in Bellevue Hospital, many years ago, I was inclined to feel that, if the attending surgeon came to the hospital and decided not to operate at once on a case that seemed to me to demand immediate attention, such a man was either "growing old" or else had "lost his nerve." Although conservatism seems to belong more particularly to those who have had considerable experience, I am unwilling to plead that I am either old or that I have altogether "lost my nerve." In using the word conservatism, I do not wish to convey the impression that I am at present less inclined to operate than formerly, for such is not the case. "The time to operate" in otology is the most difficult problem for the aurist to solve, and I feel that in some cases there is too great a tendency to operate too early, rather than to try what conservatism can do.

During the past fifteen years, one would be surprised to read in medical literature of the number of operations that have attracted the attention of otologists throughout the world. It is only a few years ago that the medical journals were filled with reports of successful attempts to improve the hearing in cases of chronic catarrhal deafness, by excision of one or more ossicles. To-day this operation is seldom performed and is generally condemned, not only, as being of no benefit to the patients, but in many instances as having made the hearing worse.

Then again, electrolysis a few years ago was brought forward as a successful method of relieving this most unfortunate class of patients, but alas, with the same results. During the past few years the medical journals have been filled with reports of operations on the mastoid, the sigmoid sinus, the internal jugular vein and the brain.

Of late, the attention of otologists has been devoted to the so-called radical operation for the cure of chronic purulent otitis media, and it is to this class of cases that I wish more particularly to call your attention, for I feel that in many cases at least a cure can be brought about by more conservative methods of treatment. The radical, or so-called Schwartze-Stacke operation, consists in opening up the mastoid antrum by making an incision behind the ear as one would do in a mastoid case, and then by cutting away sufficient bone to transform the middle ear, attic and antrum into one large cavity. The wound being closed behind, cicatrization is often hastened in this new cavity by means of skin grafts. This operation is one of the most important in otology, for, when properly and successfully performed, the patient can certainly feel that any future danger from an intracranial complication is practically impossible. To recommend, however, that this operation should be performed in every case of chronic purulent otitis media, is, in my experience, absolutely wrong.

In a conversation held a short time ago with a physician living near New York, I was very much impressed with a statement which he made in talking about patients with ear troubles. He said that since the number of operations had increased so materially during the past few years he had considerable difficulty in persuading his patients to go to the city for advice, for they felt that in consulting an otologist in New York the term simply meant that they surely would have to undergo an operation. When an operation once becomes, as it were, "fashionable or popular," there is always a great danger that it will be performed unnecessarily in many instances, and I feel that this is true not only of the mastoid operation, but more particularly of this so-called radical operation.

An erroneous impression is frequently conveyed to the mind of the general practitioner when he reads the reports of so many successful operations, and from the teaching of many he feels that an immediate operation is imperative in every case of chronic discharge from the ear. To illustrate this point, I would refer to a patient who recently came in great haste to my office and was in a very nervous state because the physician, whom he had seen in his town, had told him that he ought to be operated on at once as his life was in great danger. On questioning him, I found that he had had a discharge from one ear for years, and that the doctor had not even made an examination, but on the theory that a chronic discharge from the ear occasionally extends to the brain, had scared him most successfully. To show what can be accomplished in some instances at least, by conservative methods, I would call your attention to the report of the following cases:

Case 1.—Mrs. O., about fifty years of age, came to see me on October 2, 1901, and gave the following history:

Three years ago she had an abscess in the left ear and since then has had a discharge at times, for which she has received treatment; granulations have been removed at intervals.

When I first saw her in October she was in a

[1] Read at a meeting of the Society of the Alumni of Bellevue Hospital February 3, 1904.

very nervous state of mind, and had lost considerably in weight and general health, on account of the advice she had received from a specialist who, after an examination, told her that she ought to have an operation at once as she was likely to die at any moment from a brain complication.

On inspection of the ear, I found a moderate-sized perforation in Shrapnel's membrane with a slight discharge and very little odor. There were no evidences of a cholesteatoma and I was satisfied from an examination with a probe that there was but a slight roughness of the bone, and that a conservative line of treatment could safely be carried out.

She had no cerebral symptoms. Hearing for watch: right ear, 17 inches; left ear 1½ inches. Bone conduction increased on the left side. The right drumhead showed the usual evidences of a chronic catarrhal inflammation.

The patient was given tonics, etc., and the local treatment consisted in establishing good drainage from the attic and washing out the cavity with a bichloride solution 1 in 3,000 through a middle-ear syringe, and afterward injecting a solution of boric acid in alcohol into the attic. The discharge became less at once and her general health was very much improved. She was seen occasionally during the winter, and as the disease was yielding satisfactorily to the treatment I persisted until April 10, when the discharge ceased and cicatricial tissue covered over the roughened bone. The ear has remained perfectly dry during the past two years and she has required no further treatment. Her general health has greatly improved.

Case II.—October 13, 1902, H., a lawyer, forty years of age, consulted me on account of a chronic purulent discharge from the right ear, which he has had from childhood. He states that he has had a polypus removed several times; that the ear has discharged at intervals, but has been otherwise quiescent. The hearing for the watch was, right ear, 3½ inches; left ear, 51 inches. Bone conduction increased on the right side. Raised voice heard with the right ear 10 feet. An examination showed that a large portion of the posterior half of the drumhead had been destroyed, that there was a large opening leading up to the attic behind the short process, and that there was no obstruction to good drainage.

The only symptom which gave him any concern was a slight dizziness of late. A probe could easily be passed into the attic which revealed a slight area of roughened bone with some hypertrophied mucous tissue.

Before coming to see me he had consulted a physician who told him that he ought to have an immediate operation, otherwise he might die very suddenly. He said that he would like to postpone an operation until later in the year as he had some important law cases which occupied his attention. I told him that in my opinion he could do so. The same line of treatment was carried out as in the preceding case, viz., cauterizing the hypertrophied tissue and establishing good drainage and the use of the middle-ear syringe. In a month's time there was marked improvement. Two months later the ear was dry and has remained so ever since. The slight vertigo disappeared and was probably due to pressure on the foot-plate of the stapes caused by granulation tissue.

To prove that I am not at all opposed to operative interference in suitable cases, I would ask your consideration of the following cases:

Case III.—H. L., forty-five years of age, came to see me on February 20, 1900. He gave a history of having had an earache and abscess in the left ear ten years ago; ever since then there has been some discharge and of late there has been some odor. An examination showed a perforation high up in Shrapnel's membrane with evidences of carious bone. I explained to the patient that I was willing to try a conservative line of treatment, but that there was no doubt an operation would be the best procedure in this instance.

He preferred to postpone any surgical interference. I washed out the cavity with the middle-ear syringe and afterward injected various astringents, carrying out this line of treatment till the middle of May. The discharge ceased and he had no further trouble until October, 1901, when he returned to my office. At that time I found granulation tissue protruding from the former opening and I advised operation. From this time on until December 5 I tried to reestablish drainage to no purpose. Sagging of the upper wall of the canal took place and masses of cholesteatomatous material were removed frequently from the attic by means of a blunt curette.

On December 5, under ether anesthesia, I performed the usual Schwartze-Stacke operation, by cutting down on the mastoid process close to the auricle. The line of incision extended from the tip to a point about an inch above the superior attachment of the auricle. I opened the antrum with chisels and found a large cavity filled with cholesteatomatous material, all of which I removed. I transformed the antrum, attic and middle ear into one cavity and thoroughly removed all carious bone and ossicles, and included in this cavity the upper cells of the mastoid, leaving in situ the lower portion of the bony external auditory canal. I then divided the cartilaginous canal longitudinally. The wound behind the auricle was completely closed by sutures. Narrow strips of gauze were then packed through the canal into the middle ear so as to force the divided cartilaginous canal walls against the walls of the new cavity. A layer of gauze and cotton was then applied and the ear bandaged. The stitches were removed in a few days and the cavity was washed out regularly with a bichloride solution through the external auditory canal. In six weeks' time the entire cavity was healed and cicatrization had occurred. The patient has had no further trouble with his ear.

Case IV.—Mrs. D., a graduate nurse, about forty-five years old, consulted me on April 5, 1902, and gave the following history: In 1882

she went sea-bathing, and got water in her left ear. She had a severe earache attended with great pain, and followed by a discharge. She admits that she has neglected treatment. She had no further trouble until 1893 or 1894, when she had a recurrence of the pain and discharge. She has had pain repeatedly since then and there has been at times more or less discharge. Last January she had severe pain for eight days. At that time she came under my care and I have been looking after her since. The soft tissues of the upper canal wall were then swollen and drooping and I succeeded in removing cholesteatomatous masses from the attic through a perforation in Shrapnell's membrane. Granulation tissue was also excised. The indications for an operation were clearly marked, as there was an obstruction to the flow of a fetid pus, the cholesteatomatous material could not readily escape and there was considerable danger that the disease might extend to the brain.

She could not, however, then consent to an operation as she felt that she could not spare the time.

On April 5, however, the symptoms had become more marked; she had a troublesome tinnitus with considerable vertigo. She was also extremely nervous.

On April 8, under ether anesthesia, I opened the mastoid antrum and performed the Schwartze-Stacke operation (a short description of which I have already given). I found considerable cholesteatomatous material and a carious condition of the attic and ossicles. These masses were removed, also the ossicles and drumhead and the attic and antrum scraped with a sharp spoon. The patient stood the operation well, but suffered on the second day from extreme nausea and vomiting, which continued for several days. In two weeks' time the wound behind the auricle had entirely healed and six weeks later the middle-ear cavity was healed. I saw her in the following October and she was greatly improved in general health. The noise in the ear had ceased. She has had no further trouble.

Case V.—A. F., thirty years of age, came to see me on October 21, 1901, on account of a chronic discharge from the right ear, following scarlet fever in childhood. The hearing for the watch was, right ear, 2½ inches; left ear, normal. Bone conduction increased on the right side.

An examination showed that there was a perforation in Shrapnel's membrane, which led to carious bone in the attic, and there was a very offensive discharge containing cholesteatomatous masses. I advised an operation, as it was impossible to establish good drainage and he was subject to frequent attacks of earache. November 23, under ether anesthesia, I made the usual incision behind the auricle and over the mastoid, and exposed the antrum. I removed the ossicles which were carious, as well as the remnant of the drumhead and cut away the upper part of the bony auditory canal. Granulation tissue and softened bone were removed from the antrum, attic and middle ear, and the wound closed in the usual way. The cartilaginous canal was divided in a longitudinal direction, and pushed against the newly made cavity. The wound healed nicely and in six weeks' time the ear was entirely dry and has given no further trouble.

After the discharge has been cured by the Schwartze-Stacke operation, the patient's general health is usually very much improved, which is generally shown by an increase in weight, so that when this operation is clearly indicated, not only is the general health greatly improved, but the danger of a intracranial operation is practically impossible.

There are, however, several points that I would like to call to your attention this evening. In the first place, in considering the advisability of an operation in a patient suffering from a chronic otorrhea of long standing, we should determine first of all, as to whether the perforation is sufficiently large for the purpose of drainage. If the opening is large and we can readily pass a probe into the attic and find but little carious bone, I feel that it is our duty first of all to try to cure the disease by means of injections through a middle-ear syringe. There is but little chance of the disease extending to the brain, if the patient is properly treated.

Solutions of bichloride 1 in 3,000, should be used, followed by injections of boric acid in alcohol or iodoform and alcohol. Peroxide of hydrogen should never be used in such a perforation. Exuberant granulations should be removed, and everything done to establish good drainage. If, however, a patient comes to us, who complains of frequent attacks of earache, and on examination we find that good drainage is impossible, owing to a small perforation, and that the ossicles are carious, that the discharge is fetid and contains cholesteatomatous masses, and, moreover, if we detect a carious condition of the attic, we should, under such conditions, advise an immediate operation unless we feel that conservative treatment can be first attempted.

Occasionally, such a patient is apt to have frequent attacks of mastoid inflammation, as shown by sensitiveness on pressure over the mastoid process. In such cases, an operation is clearly indicated, for such a symptom shows that the disease has extended to the mastoid cells, and is likely to extend into the middle cranial fossa very rapidly, as the outer cortex of the mastoid in such instances is usually very hard and thick.

Other symptoms calling for an early operation, are headache, nausea, vomiting and vertigo. The danger of an intracranial complication is very much greater in hospital patients, for they generally wait until some serious symptoms develop. So that an erroneous impression is frequently conveyed to the mind of the general practitioner by the report of serious, and, in some instances, fatal cases of chronic otorrhea.

There is one other point to which I wish to refer, in speaking of conservatism, and that is, that in all operations on the mastoid process, and

in operations for brain abscess and sinus thrombosis, there is at the present time a great tendency to make too extensive incisions over the mastoid and in the neck, without any regard to subsequent disfigurement of the patient. If we remove too much bone from the mastoid we are liable to have considerable depression, and the auricle does not return to its natural position afterward, especially if we carry our incision too far upward, and curve it over the auricle in the temporal region.

In concluding, I would like to say that in every instance we should try to cure our patients without an operation, if possible, and we should remember that every operation is attended with a certain amount of danger.

In the Schwartze-Stacke operation there is always a chance of injuring the facial nerve, and while the paralysis is frequently only temporary, there is a possibility of its being permanent in certain cases.

INTRAHEPATIC CHOLELITHIASIS.

BY EDWIN BEER, M.D.,
OF NEW YORK.

(Continued from Page 209.)

Without going any further into details, it might be well to sum up the results of this investigation as far as I have gone. The observations are of decided theoretical importance. Here we have experiments similar to those of Mignot, Miyake, Italia,[40] and others, not in animals, but in man. In a process as intricate as that which leads to gall-stone formation, many are loath to accept all that animal experimentors observe, and with perfect justice, as there are decided differences between man and lower animals, differences which are not only chemical, but also anatomical.[41] Moreover, the results in animal experiments have not been regularly successful, and, even recently, Wolynzew[42] has reported complete failure.

In animals the cystic duct was obstructed, and bacteria introduced. In our cases the common duct was obstructed, and bacteria, that infest the lower one-third of the choledochus, spread into the system of ducts. In both cases stagnation is followed by inflammation—in both cases gall-stones are produced. In animal experiments, in the gall-bladder, in human beings, in the liver ducts. Thus we have the direct proof that gall-stones in man result from infection of the biliary system—that the gall-stones are the result of a local inflammation. Moreover, these cases show that there is something else that influences the production of stones, as all cases of stagnation and infection do not lead to stone formation. Whether this third factor is a diathesis, as the French authors say, or a disposition, as Riedel puts it, must be decided by the collection of a very large number of cholangitic cases, and, by experimental work.

That there can be no difficulty in applying these same facts to gall-stone production in the gall-bladder is self-evident. What applies to the intrahepatic ducts, applies equally to the gall-bladder. The reason that stones form in the bladder so much more frequently than in the liver ducts is undoubtedly to be found in the fact that the local stagnation in the gall-bladder is a frequent occurrence, whereas stagnation in the liver is rare. Infection in the stagnant gall-bladder is also much more frequent than an intrahepatic cholangitis. These factors undoubtedly explain the greater frequency of gall-bladder stones. But in the gall-bladder, as the result of every cholecystitis, stones do not form; a similar third factor seems to play a part here, just as in the cholangitis cases.

Another point of theoretical interest is the fact that gall-stones do not develop in stagnant bile in the ducts, except when the inflammatory process is purely catarrhal, and fail to develop when the process is suppurative.

Recently Ehret and Stolz[43] found, in a case of cholangitis suppurativa no stone production, and in a case of purulent cholecystitis no cholesterin in the gall-bladder contents. To harmonize these findings with the experimental work in animals, the conclusion that mild inflammatory processes alone lead to stone formation seemed warranted. In my own, and in Kehr's cases, there is no doubt that stones developed in the intrahepatic ducts as the result of a suppurative cholangitis. As yet, however, there is no proof that a suppurative cholecystitis will lead to stone formation in the human gall-bladder. Such cases are operated, or are fatal before the necessary time elapses for stone formation, or they recover and no one knows what has taken place in the gall-bladder.

Both series of cases, Kehr's and mine, also demonstrate clearly that stones of good size can develop within three months, which is much faster than was thought, and more rapidly than Mignot (five to six months), Miyake (six to twelve months), and Italia (four months), succeeded in producing calculi experimentally.

From the foregoing it is evident that gall-stones are found within the liver ducts more frequently, and more regularly, than is generally admitted. They are perhaps always present, if a cholangitis develops secondary to obstruction of the choledochus by stones, provided the condition lasts longer than one month, gravel, in all probability, being present at an earlier stage.

In considering the structure of these intrahepatic stones, one is impressed, as said before, with the purely local shapes of many of the specimens. Though distinct tetrahedral stones are found mixed in with a lot of bile gravel, still many stones have shapes suggestive of their duct origin. These peculiarities have been touched upon before, in discussing the views of Charcot and Langenbuch.

In one of my cases (VI), in which the stones were as large as cherry pits, the stone nearest the porta hepatis was fairly well rounded, fitting tightly in the duct, while the stone situated next to it, and more centrally in the liver with regard to the choledochus, was distinctly, though irregularly, faceted, and of the same size. They both were brown in color, and contained pigment and

cholesterin. In another case I found one almost pure bilirubin calcium tetrahedral stone, hidden away in the ducts of the right lobe. In another instance the calculus was a long ovoid, containing pigment and cholesterin. Its color was black, and it looked like a miniature sausage, almost one cm. long. Peters[44] has reported distinctly branched calculi. At times, one finds the calculi still soft in the intrahepatic ducts, fitting these like molds, and composed of pigments and cholesterin. At other times the calculi seem conglomerates of bile gravel.

From the literature, the impression is obtained that intrahepatic stones are regularly composed of pigment, bilirubin, or its derivatives combined with calcium, but, from the above, it is evident that cholesterin here, as in the gall-bladder, is a very frequent factor. In the gall-bladder, pure cholesterin stones seem to form despite the fact that bile is present, as the cysticus is patent when the stone is discovered. It is difficult to understand how such pure stones can develop in the gall-bladder if bile is present, and just the same difficulty applies to the cases of pure cholesterin stones in the liver, such as Czerny[45] and Cassaet mention. The possibility of a secondary substitution of the bile pigment in the primary stones by the infiltration of cholesterin, may have a part to play in the production of these pure cholesterin calculi.

In the literature other peculiarities of these calculi in the ducts are mentioned as rarities. Laboulbène[46] and Peters have seen distinctly branched calculi corresponding with the pictures of casts of bile ducts from the interior of gall-bladder stones, portrayed in Thudichum's book. Naturally the latter are minute, microscopic even, whereas the former are not. Glisson had described a similar kind of stone in cattle, and it is spoken of as resembling coral. Calculi of tubular shape have been found, but these also are rarities.

The usual types are the pigment, and pigment and cholesterin calculi. They are small in the early stages, but if they remain in the liver they may grow to the size of cherry pits or hazelnuts. With these calculi are found deposits of pigment sand in the early stages, but later, when the bile streams on into the bowel, the sand may pass out and the stone remain imbedded in the liver duct. Facets are not regularly found, but as in several of my cases and in a number in the literature such facets are distinctly present. The method of their production is very obscure. Until a large number of such stones are gathered, and examined with great care, it will remain undecided. Probably factors similar to those in the gall-bladder are at work here. The general shape has been sufficiently discussed, as well as the frequent intimate relation between stones and ducts, but it must be mentioned that occasionally the ducts in the liver become irregularly dilated, little sacs form and the stones grow in these.

So much for the intrahepatic stones, their causation and frequency of occurrence. Another side of this subject presents itself, and now we must see whether these little stones are of any practical importance. This has been denied on the one hand, and on the other it has been asserted by various clinicians, but the first operator to come in contact with them, provided the above analysis of his cases is correct, happened to be Kehr, and their presence in part affected his surgical procedure.

Such intrahepatic stones may remain in the liver, and this applies to those that develop there as well as those that wander into the liver from the bladder, and may cause absolutely no bad effects. They may, however, lead to a variety of results in the liver. On the other hand, they may wander, and perhaps here is the chief source of danger. Still it must be admitted that, though they may lead to unfortunate results as far as we know, in the past they do not seem to have done as much harm as one would expect, seeing how regularly they follow cholangitis and choledochus obstruction due to stone. Whether this phase of the question has escaped attention just because extrahepatic stones have not been regularly examined to determine their possible intrahepatic origin, and because the intrahepatic ducts have not been carefully followed and the condition of intrahepatic stones has been ignored, is difficult to say, though such an explanation is very likely correct. A great many difficulties are encountered in this realm and in years to come when we are more perfectly equipped we shall recognize the results that follow intrahepatic cholelithiasis more easily and more frequently. Still at the present day it is possible, by using the extensive literature, to arrive at some conclusions as to the possible results of such stone formation.

If we concern ourselves with the stones that move out of the liver ducts and become extrahepatic, the most likely result is that they will pass off into the intestine. Whether that is really true can not be determined at the present time. On the other hand, it is pretty generally conceded that these intrahepatic stones may wander into the gall-bladder and there act as the nucleus for larger stones. It can not be denied that many gall-bladder stones have a pigment nucleus, but to ascribe this to intrahepatic origin in every case would be unjustifiable. Thudichum has upheld the intrahepatic origin of these nuclei more energetically than anybody else. Lawson Tait[47] and Hein expressed similar views. The casts of ducts that Thudichum found inside of fresh gall-stones have not been found by subsequent investigators. Naunyn says he did not see them. I have been able to convince myself that one can wash out of the center of fresh calculi pigment masses of different shapes, some of which under the microscope are distinctly branched. They are not regularly found nor do they suggest casts of biliferous ducts, but rather a chance apposition of small pigment masses. Although this view of Thudichum has not gained great favor, as is natural seeing that the proofs are lacking, many authors are willing to admit that the intrahepatic bilirubin

calcium stones may form the nucleus of stones in the gall-bladder. Naunyn admits this without in any way invalidating his position with regard to Thudichum's theory. On page 49 he says: "The intrahepatic bilirubin calcium stones constitute a peculiar and separate group. They seem, not infrequently, to act as foreign bodies in the gall-bladder, and produce here the symptoms of cholelithiasis. It is, at least, very striking how frequently these small stones which form in the liver ducts are found as the nucleus of cholesterin stones in the gall-bladder. I possess several collections of 20 to 30 calculi from different gall-bladders, each calculus containing as nucleus such a bilirubin calcium stone."

More recently, 1899, Hoppe-Seyler has expressed a similar view. No doubt the nucleus of many gall-bladder stones contains material identical with that of intrahepatic pigment stones, but why should not the same chemical combinations be effected in the gall-bladder as result in the intrahepatic ducts? Bilirubin calcium stones occur in the gall-bladder as well as in the liver ducts, though seemingly even less frequently. The size of the nucleus and the material, as well as the frequency with which gall-bladder stones bearing such a nucleus occur point perhaps to a source for the pigment nucleus other than the gall-bladder. How regularly such an extra-bladder origin is present can not be stated.

Laboulbène's[48] and perhaps Cassaet's[49] cases show that this intrahepatic origin of gall-bladder stones is not pure hypothesis. Laboulbène found coral-shaped calculi in the bladder and similar smaller calculi in the "canaux hepatiques," which, according to Charcot, Bouchard and Brissaud,[50] is an instance of intrahepatic stones that have wandered into the gall-bladder and grown there. Chemically and physically the stones were similar. In both positions they were coral shaped and contained products of the oxidation of bilirubin and very little cholesterin. Cassaet's case is similar but less conclusive, as his calculi lacked the morphological identity of structure. Still he concludes: "*Pour parler plus exactement les gros calculs n'étaient formés que par la conglomération des petits.*"

It is evident from all this that one of the distinct dangers of an intrahepatic stone formation lies in this wandering into the gall-bladder and there growing into an adult stone. Another danger rests in these stones remaining in the common duct and growing there.

It has been the custom to underestimate the importance of smaller calculi, as they, being small, would naturally pass into the bowel. Since it has become appreciated, however, that the symtoms of gall-stones owe their origin to inflammation, that biliary colic does not mean a rough stone working its way into the intestine but inflammation and impaction, the smaller stones have been found at the bottom of much trouble. Deaver[51] has put this very distinctly, saying "the presence of a calculus, even if insufficient in size to produce jaundice, will impair the drainage of the duct and induce a train of symptoms causing chronic invalidism."

In Riedel's[52] recent book a similar appreciation of small stones is found on page 102, where, in speaking of the treatment of stones in the choledochus, he says: "Nothing is more liable to lead to unfortunate consequences than the breaking or crushing of a stone in the choledochus, as all the fragments can not be removed. If one fragment remains in the duct, the result of the operation is nil."

In another passage he tells of cases that had to be operated a second time when after a new attack minute stones that in the first operation could not be felt in the choledochus were removed.

These are not isolated views, but many of the most experienced gall-stone surgeons have come to these same conclusions. Thus it is evident even the small intrahepatic stones may lead to trouble here in the choledochus. How often they will do so is another question. That it is a danger can not be denied. Perhaps the serious results in such cases as Kehr reports are really due to intrahepatic cholelithiasis and impaction of an intrahepatic calculus at the papilla and not due to a stone being left by oversight in the choledochus at or after the operation.

Kehr's assistant, Berger, has undoubtedly gone too far, in saying that every stone and every fragment that is removed by hepatic drainage means the prevention of a certain relapse.

If that were so, seeing how frequently intrahepatic stones form in the cholangitic and obstructed ducts, we would have heard, it seems to me, of more recurrences after choledochotomy without hepatic drainage, for even Kehr, before he used this form of drainage, did not have anything like the percentage of recurrences that Berger's statement would indicate. Berger's enthusiastic conclusions can not be shared.

From the above analysis, however, I think that one is justified in saying that intrahepatic stones may wander into the common duct and cause trouble there just as well as they can get into the gall-bladder and become the nuclei of larger stones. These two consequences are, no doubt, the most important and most frequent unfortunate outcomes of intrahepatic stones, provided they move out of the liver and do not get into the duodenum. If they remain in the liver, they may cause no trouble at all, as in my case of stones in the left lobe of the liver, without any bad effects either in the organ or clinically. On the other hand, there is no doubt that such calculi may be a source of danger, even if they remain in the liver.

These dangers are chiefly in the nature of inflammatory changes, whether they establish a locus minoris resistentiæ, or whether by developing in the smaller infected ducts they cause retention in the more central part of the duct, while the rest of the system is freed by removal of the obstruction of the choledochus, is unknown.

Langenbuch,[53] in speaking of stones in the

ducts, writes: "Such wanderers remain in their new site and lead to decubitus and abscesses or the flow of the bile drives them back into the common duct." Such ulceration about a calculus might lead to structure of the duct and formation of fresh stones deeper in the liver. Stones that remain in the liver may lead, at the place they are impacted, to a marked inflammatory reaction in the adjacent tissues, so that "cysts with thick, firm walls develop, enclosing the calculus, while the parenchyma in the vicinity remains normal or becomes indurated, or undergoes degenerative changes." Frerichs has also called attention to the possibilities of such stones causing pylephlebitis and abscess. Geigel[54] emphasized the relation of the vessels about the ducts to the portal system and the possibility of liver abscesses from this source. Budd had previously called attention to this. In such a way intrahepatic stones may lead to abscesses in the liver as well as by the purely local pericholangitis about the intrahepatic stones.

How often intrahepatic stones lead to abscess is as yet unknown. There is no doubt that gall-stones are found in hepatic abscesses, but in these cases the examination of the intrahepatic ducts has been disregarded, so that it is impossible to decide whether stones resulted from the abscess or led to the same, though the latter view is the more likely.

If intrahepatic stones get lodged in the larger ducts in the left or right hepaticus they might lead to the results Nasse[55] obtained after ligation of one of these. Courvoisier reports an atrophy of the liver in some of these cases. Perhaps it is the analogue of the experimental atrophy produced by Nasse.

Whether stones in the hepaticus proper are of gall-bladder or hepatic origin is still disputed. Most authors favor the former view, whereas Naunyn, though he says that the gall-bladder is the usual origin of hepatic stones, still admits an intrahepatic origin of some of them.

From all the above it is clear that intrahepatic stone formation, as well as the wandering of gall-bladder stones into the liver ducts, may lead to a variety of unfortunate consequences which may be of the greatest moment to the patient. Perhaps the most likely result is a recurrence of the patient's gall-stone symptoms, due to wandering of intrahepatic stones into the gall-bladder or into the common duct. Time will show how important this is as a factor in the so-called "Recidivs," which have been so frequently magnified by the internists and so persistently minimized by the surgeons.

If Naunyn's theory of the purely local inflammatory cause of gall-stones were true, one would expect that the inflammation that leads to the first gall-bladder stones would repeat itself and result in fresh stone formation. If such a fresh stone formation occurs the future of operated patients, provided of course the gall-bladder is not removed, is not certain. Such a new formation (a true recurrence) must be distinguished from a false recurrence or a recurrence of symptoms due to unremoved stones or to secondary and postoperative adhesions, herniæ, etc. This distinction is, of course, very difficult clinically, but it must be insisted upon if the question of real recurrences is to be definitely settled. Internists have been citing cases as real recurrences where, as Kehr has repeatedly pointed out, no certainty could exist as to the complete removal of all the stones. In answering the question one must use the cases in which a radical operation has been done. As Kehr says, in all cases operated in the acute stage, as well as in all cases not operated by ectomy and hepatic drainage, stones may be left in so that these cases can not be used in discussing actual new formation of stones.

Czerny, Körte, Poppert, Riedel and Kehr (1900) have reported no real recurrences, and, as said before, they are inclined to think such a new formation is very exceptional. Naunyn,[57] on the other hand, says, "Even if all stones are removed, that does not prevent a new formation of stones." It is evident from the cases of intrahepatic stones that Naunyn's view is correct, that the stones in the liver are produced at a time when the other stones are in the gall-bladder and more or less independent of the bulk of these. The intrahepatic stones that develop there are theoretically, and at times clinically, real recurrences.

In addition to this evidence of a fresh production of calculi other evidence is found in the stones in the gall-bladder. Leichtenstern said that "in the great majority of cases the formation of stones is effected at one time, and that process is not repeated during the rest of the patient's lifetime." Or, as Naunyn says, "The calculi in a gall-bladder are usually, as Hein and Bramson pointed out, both of the same age and of the same composition."

No doubt these statements are in part true, but it is just in the exceptions that we see the production of stones at different times. In one gall-bladder, for instance, I found a large number of stones which varied in size from a walnut to a pea, but the intervening or intermediate sizes were remarkably definite, so that I could, without the slightest difficulty, divide the stones into five groups, according to their sizes. The composition and layers of the stones did not correspond, and the largest stone was pure cholesterin and the others were mixed. Not only was this ready division and separation possible, but the number of representatives of each generation of stones varied, so that the largest and oldest stone was single, the next generation and next in size represented by eight, and so on to the pea-sized stones, that were most numerous, numbering over 100 in all.

No doubt everybody has seen similar stones repeatedly, but Riedel,[58] with his large number of cases to draw from, shows that this arrangement is very frequent. He says: "Multiple generations were observed in ten instances (31 per cent.)." Thus in 326 cases that could be used for this estimation, he found multiple generations in one-

third of the cases, just as frequently as he found one to three stones in the bladder. This is excellent proof that the possibility of gall-stone production at different times exists.

The cases of gall-bladders in which silk sutures have been left at operation, and stones formed about them, are equally good proof that stones may form again. These facts and the relation of intrahepatic cholelithiasis to extrahepatic must be considered in the discussion of real recurrences. The possibility of such new formation can not be denied. How often after cholecystostomy it occurs, in the gall-bladder, is a problem of the future, just as the determination of the frequency of the advent and growth of intrahepatic calculi in the gall-bladder.

The most radical method of dealing with gall-stones, and the one which aims at getting rid of all these dangers, is that advocated by Kehr. If the gall-bladder is removed, no stones can form there again. If to ectomy is added choledochotomy and drainage, stones in the ducts which have or have not caused symptoms will be removed by the operation or by the subsequent drainage of the choledochus and hepaticus. This combination of operative procedures has proven very successful, as far as immediate results are concerned. In 17 per cent. of his 93 cases during the after-treatment stones and fragments have been removed by lavage and drainage of the ducts. A suture of the choledochus at the operation would have run the risk of recurrence in many of these cases.

As yet no method seems to approach this in its ability to deal with the secondary intrahepatic formations, as well as the stones that may have wandered into the intrahepatic ducts from the gall-bladder, and even though it may fail to remove all of these, as was shown by autopsy in one of Kehr's patient's, who died some eight days after the operation, still it surely does much more for the prevention of "Recidivs" from this source than any other method. In cases of cholangitis the drainage of the hepaticus must be carried out if these new fragments and stones are to be removed.

A large number of cases of stone in the common duct that have had signs of obstruction have also had cholangitis, and although at the time of operation no sign of cholangitis is present, the intrahepatic stones must be considered and dealt with. From an examination of the bile obtained at operation, unless done under the microscope and by biological methods, one can not be sure that a cholangitis is not present.[59] Moreover, as Riedel[60] has recently shown, a most extensive suppurative cholangitis may be present and give no symptoms. He saw three such cases, and one of my own resembles Riedel's series.

Opinions of surgeons are still at variance as to the advisability of drainage of the hepaticus. Some oppose it except in the severest cholangitic cases, while Kehr considers it the ideal operation in non-acute cases, even if cholangitis is not present. From the cases brought together in this paper, from the study of the causation of intrahepatic stones and their possible relation to recurrences, as well as to future changes in the liver, it would seem that drainage of the hepaticus was the only method of operation for even mild cholangitic cases as well as for cases that have had symptoms of choledochus obstruction and cholangitis at some previous time, though the immediate cause of the present operation may be in the gall-bladder itself.

Another practical conclusion can be drawn from this study. Courvoisier said that a choledochus obstruction should be relieved at an early date to avoid the formation of intrahepatic stones. Here we are between two fires. As is well known, early choledochotomies are liable to lead the operator into trouble. The duct may be empty, the stones having passed, or the duct may be filled with countless stones. When a stone and cholangitis are certain an operation before the second month naturally would avoid the danger of intrahepatic stones forming and future trouble. This problem, purely therapeutic in character, scarcely enters the scope of this study, though the decision as to when to operate is of great interest and importance. It must, however, be emphasized that the earlier the operation the less danger there is of intrahepatic cholelithiasis.

In closing, I wish to express my gratitude and thanks to both Professor Ghon and Docent Stoerk for their many kindnesses.

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OBSERVATIONS ON DILATATION OF THE STOMACH AND ON GASTROPTOSIS.[1][2]

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The subject of this paper, "Dilatation of the Stomach, Gastroptosis and a Discussion of the Methods of Physical Diagnosis in Diseases of the Stomach," would seem to me to be of interest not only to the specialist and the surgeon, but also to the general practitioner of medicine, upon whom the first diagnosis of the case depends and upon whose judgment so much responsibility is placed.

My paper is the result of a series of observations made during the course of my service in grastro-intestinal diseases at the Manhattan State Hospital, West, Ward's Island. It also includes cases from the Manhattan State Hospital, East, which institution I am visiting for Dr. Thomson.

These two hospitals have as inmates over four thousand patients, male and female, equally divided, and furnish a fruitful field for investigation into the gastro-intestinal tract. I have also secured valuable material from my service in diseases of the stomach, at St. Bartholomew's Clinic and in my private practice.

I feel that I owe much to the courtesy of Drs. Dent and Macdonald of the Manhattan State Hospital and to the assistance of Drs. Delacroix, Meager, Holmes and R. Haviland of the staff. My associates, Drs. John E. Traub and C. T. Graham-Rogers have visited these institutions with me and assisted in my researches, and I have also received many valuable suggestions from my friend, Dr. Achilles Rose.

About a year ago, Dr. William H. Thomson first instituted a thorough research into the etiology of epilepsy at the Manhattan State Hospital, West, Ward's Island, and later extended his researches to the East Hospital. I was requested to take charge of that part relating to the gastro-intestinal tract. We expect, however, to continue this work for a considerable period of time, but as I have secured some rather interesting data from these institutions, as well as from other investigations, I felt that I should report them.

I would first call attention to the unfortunate fact that it has too often been the habit to depend on the examination of the stomach contents alone and to neglect the investigation of the motor functions and position of the stomach itself. As we shall demonstrate later, a prolapse of the stomach may exist without discoverable nephroptosis, and often with no enteroptosis that is detectable by the ordinary means of physical diagnosis. However, when a ptosis of the stomach exists, the intestines must necessarily accompany it.

We may find a hyperacid condition of the stomach, with the organ in its normal position; the same may occur with dilatation of the stomach and again hyperchlorhydria (hyperacidity) is a frequent concomitant of gastroptosis.

On the other hand, hypochlorhydria (or diminished acidity) may occur in a stomach occupying the normal position, also an organ that is dilated and in gastroptosis. Dr. Rose, for example, has demonstrated that certain symptoms attributed to gastritis may be due to gastroptosis. Cases of achylia gastrica have been reported, in which the stomach is diminished in size—including its containing capacity, the organ occupying the normal position. We have Dr. Einhorn's classical case, with practically no symptoms except rumination and a coated tongue. We have, furthermore, achylia gastrica in cases of marked dilation of the stomach and the same condition existing with gastroptosis.

These facts demonstrate that mere chemical analysis of the stomach contents is insufficient; but that we must in addition carefully investigate the motor functions and the position of the organ, in order to arrive at an accurate diagnosis and give a correct prognosis and proper treatment.

ATONY OF THE STOMACH.

It would seem to me of importance to discuss for a few moments "atonia gastrica" or "atony of the stomach," since this condition must necessarily first occur before dilatation of the stomach is produced. Even when a spasm, or stenosis of the pylorus is the cause of the dilatation, a mechanical atonic condition of the muscles of the stomach from exhaustion due to the resistant action of the pyloris, must occur before dilatation takes place. Atonia gastrica may be defined as a loss of tone or contractile power of the muscles of the stomach, so that the organ is distended and does not contract about its contents, with a resulting motor insufficiency.

Dr. Rose states that "atonia gastrica, dilatation of the stomach and gastroptosis are identical." I think that by this he means that dilatation of the stomach and gastroptosis are progressive degrees of atonia gastrica, and in this sense I agree with him.

In gastroptosis, I am aware that some dispute the dilatation of the organ; but my own observations cause me to state that such dilatation exists, as does necessarily varying degrees of motor insufficiency. It is inconceivable that in a condition of splanchnoptosis—a general relaxation and atony—with a descent of the viscera, that the

1 Read before the Medical Association of Greater City of New York, March 14, 1904.

2 Received for publication April 26, 1904.

stomach, as a matter of selection, should be exempt.

On the other hand, nature is a most beneficent mistress and affords us, literally speaking, many compensations—the most common example—compensatory hypertrophy in cardiac dilatation. Furthermore, in gastric conditions, we may have normal digestive functions, when examination has demonstrated that gastroptosis exists. There may be achylia gastrica without subjective symptoms. Finally cases which on examination show dilatation of the stomach, apparently suffer from no motor insufficiency, since within a brief period after administration of the test meal, practically no remains can be aspirated from the stomach. Whether this condition is due to a relaxed condition of the pylorus, or to a compensatory hypertrophy of the dilated stomach, is still a disputed question. Atonia gastrica, according to Dr. Einhorn, may occur as a complication of chronic gastritis, hyperchlorhydria (hyperacidity), neurasthenia gastrica, tuberculosis, heart disease, or any weakening affection and as a primary neurosis. My own observations lead me to state that the unfortunate habit of "bolting the food" may be an etiological factor.

As symptoms, there may be headache, diminished appetite, eructations of gas, a feeling of fulness after meals and constipation. Splashing sound is present and chyme is found six or seven hours after Leube's test dinner; others find it present also, two or three hours after Ewald's test breakfast. If, however, an hour after the latter, and we find 100 c.c. or more of contents associated with the above symptoms, we may consider the condition as atonia.

The stomach is found empty in the morning—in the fasting condition. Boas describes the descent of the greater curvature on the addition of water as a reliable symptom, but other disagree with him. Butler believes that atony of the stomach gives as symptoms motor insufficiency and moderate dilatation. It would seem, however, that the *condition has not yet progressed to dilatation.*

As to the splashing sound as a constant symptom of atony and as an aid to diagnosis, Drs. Einhorn and Rose have demonstrated that this is not always present, and also that it exists in many persons not troubled with digestive disturbances. Dr. Einhorn states that they have examined a hundred cases in regard to this special point. When present, however, it is an aid in locating the position of the stomach. Furthermore, to quote Dr. Einhorn, "In normal conditions a splashing sound can sometimes be produced by striking the abdomine with the hand." On examining the patient in the fasting condition, the existence of the splashing sound is of value in showing that the stomach is not empty and hence abnormal. This, however, is not a reliable sign and I perfectly agree with Debove and Redmond that sometimes, although rarely, the stomach may be found empty notwithstanding a splashing sound. Moreover, the absence of this phenomenon in the fasting condition does not by any means warrant the conclusion the the organ is empty, etc.

During my service at Ward's Island I have found the splashing sound to be absent in at least 40 per cent. of my cases of dilatation of the stomach and gastroptosis. They were proved to be such by both symptoms and transillumination of the organ. Splashing sound is of service when demonstrable, but unfortunately is quite frequently absent.

The treatment of atony of the stomach comprises hygiene, regulation of the diet, massage, hydrotherapy, electricity and the administration of strychnine.

DILATATION OF THE STOMACH.

Having described atony of the stomach at considerable length, believing it to be the preliminary stage, so to speak, of dilatation, we will now speak of dilatation of the stomach.

In effect, when do we consider a stomach to be dilated? Is it to be measured by its capacity alone, or by its capacity plus the alteration of its functions?

The capacity of the stomach is an extremely variable quantity. Ziemssen has shown that a stomach may be normal and only contain eight ounces, whereas another stomach, also normal, may possess a capacity of a couple of quarts. Boas has demonstrated that an apparently dilated stomach may really be in a condition of compensatory hypertrophy. We may, therefore, state the rule, *As long as the functions of the organ are normal, we cannot regard the conditions met with as pathological.*

In reference to the stomach itself, what is the chief point of differential diagnosis between dilatation of the organ and gastroptosis? Is it the degree of the descent of the lower border of the stomach? By no means. We see cases in whom the lower margin of the dilated stomach may have descended further than a stomach which is in the condition of ptosis.

In *dilatation of the stomach the lesser curvature maintains its relation to the diaphragm.* The muscular fibers first elongate in the vertical direction and the distance between the lesser and the greater curvature is increased. Dilatation may also ensue in the transverse and anteroposterior dimensions and the pylorus may be a little further to the right and in a slightly lower plane—but in general, the *lesser curvature maintains its relation to the diaphragm,* and this is the differential point between dilatation and gastroptosis. This feature is best demonstrated by transillumination of the stomach. Some authorities also claim that during transillumination the light follows the respiratory movements with dilatation, but does not do so with gastroptosis, and consider this a second differential point. My own observations do not confirm this view.

On the other hand, with gastroptosis the suspensory ligaments of the stomach are relaxed and the entire organ sinks; the lesser curvature as well as the greater, and in aggravated cases the lesser

curvature looks inward, to the right; the greater curvature, outward, to the left, and the pylorus may often lie below the level of the umbilicus. I have already given my views regarding atony and dilatation in cases of gastroptosis. The ptosis of the intestine, which is attached to the pylorus, readily explains the semi-rotation of the stomach on purely mechanical grounds. Curiously enough the vertical stomach is a return to the fetal position of the organ.

I might state that, though Dr. Einhorn employs the term ischochymia (retention of chyme) in place of dilatation of the stomach, I prefer the latter nomenclature, as more generally accepted. In addition, the retention of chyme is the result of the condition—the atony and dilatation.

I would furthermore call your attention to the claim of certain of our specialists that no dilatation occurs unless there is obstruction at the pylorus, either spasmodic or mechanical. In reply, I would state that we are all familiar with cases of chronic gastritis with dilatation of the stomach—in which there is no pyloric obstruction. I can show you numerous such cases at any of my clinics at Ward's Island. Furthermore, these gentlemen seem to forget the anatomical arrangement of the muscular fibers of the stomach, with the increased thickness and strength at the pylorus. In the atonic condition it is to be expected that yielding should occur at the points of least resistance, according to the ordinary laws of mechanics. The explanation is extremely simple and the theory held by these gentlemen would seem to me to be untenable, both on mechanical and clinical grounds.

In the discussion of dilatation of the stomach, I wish to first briefly refer to acute dilatation, upon which we may state there is comparatively little literature.

(1) There is acute dilatation as described by Einhorn, found as a result of acute inflammation of the mucous membrane of the stomach, due to errors of diet. It seems uncertain whether the dilatation is a result of pyloric spasm, or paralysis of the gastric muscles—possibly of both.

(2) Riegel describes a post-operative dilatation, especially following abdominal section. Some of the symptoms are apparently those of obstruction and yet secondary operation has demonstrated that such does not exist. The stomach is enormously distended with gas and there is vomiting. Lavage is of special value, as are also enemata, or irrigation of the bowel. This class of cases would seem to me to be the manifestation of an atonic condition, a paresis, so to speak, of the entire gastro-intestinal tract, the stomach as well as the intestines being distended. Dilatation of the stomach I believe to be an important factor and the general condition seems to correspond to our former nomenclature of postoperative intestinal paresis, which might be more correctly called gastro-intestinal paresis.[1] It would seem to be due to some shock of the sympathetic system, from the operation; at times to the anesthetic and later to uremia, or to sepsis.

(3) A third type of acute dilatation of the stomach which I have personally observed on several occasions, is in typhoid fever. In these cases there is not only acute distention of the stomach, but of the intestines as well. I can recall one case in which enormous distention of the stomach occurred, great quantities of gas being belched from that organ. The intestines also became suddenly distended, there were rapid respiration and a rapid and feeble heart with some shock. The differential diagnosis lay between acute gastro-intestinal distention and perforation of a typhoid ulcer. In many cases, I believe it nearly impossible to differentiate this condition from perforation, until the existing distention is relieved. In fact, I am cognizant of a case operated on at one of our large hospitals, there being the condition of dilatation as described above. No perforation was found and the patient died of postoperative shock. One important point in the diagnosis is, that perforation is first followed by local rigidity of the abdominal wall, which later becomes general. Hot stupes, hot drinks and enteroclysis are of value in relieving the distention. At times lavage, or the introduction of the stomach tube to relieve excessive gastric distention may be found necessary.

(4) A type of acute dilatation of the stomach is described by Mangelsdorf of Bad Kissingen. He examined over four hundred persons suffering from migraine, and found acute gastric dilatation during the attack. He also discovered this same condition just preceding many attacks of epilepsy. An excellent abstract of his article will be found in a recent number of *The Post-Graduate*, translated by Dr. Achilles Rose.

(5) Acute dilatation of the stomach may occur during the course of pneumonia, or other pulmonary diseases, and in such cases on account of of interference with the respiratory and cardiac functions may become a source of real danger. Indeed, the dangers of tympanites in pneumonia have been discribed by Broadbent and others. The stomach undoubtedly takes an active part in this distention and L. Emmett Holt, for example, calls our attention in his recent work on "Diseases of Children," to the dangers of dilatation of the stomach in pulmonary diseases. Regulation of the bowels, diet and gr. V doses of resorcin in adults are of value to prevent gas accumulation.

(6) In infants and young children, convulsions from overloading the stomach are not uncommon and emesis often produces immediate relief. I have noted acute distention of the stomach in these cases. Such attacks, continuously repeated, I believe may predispose to the convulsive habit and be a factor, in some cases, in the production of epilepsy.

(7) Acute dilatation of the stomach from indiscretions in diet may result in a cardiac attack, in effect be the cause of a pseudo-angina. I have at present a patient whom I have attended for

[1] This type of acute postoperation of the stomach, on pages 453 and 454 of International Medical Annual, 1904. An abstract from Walzberg from the *Arch. f. klin. Chir.*, Bd. 66.

over ten years and whom I have had under careful observation during at least twenty attacks. In these, the stomach is enormously distended with gas, there is belching of wind, escape of gas from the rectum, the heart action is rapid and feeble, the respiration rapid and labored. Emesis at once affords relief.

On a number of occasions the patient became entirely unconscious and extremely cyanotic. Only six weeks ago she had such an attack. While still unconscious she vomited a large amount of undigested food and there was an enormous escape of gas by mouth and rectum. There was immediate relief from all the symptoms. Cheese soufflée, mushrooms, and rich desserts, all taken against explicit orders, having produced these attacks. There was no neurotic element in the case.[1]

Finally, I shall merely refer to tetany and to tonic and clonic convulsions occurring with dilatation of the stomach, as described by Dr. Einhorn. The causes of these attacks are still in dispute, anto-infection and other factors being given. It suggests itself to me that in part we may offer as an explanation a sudden *acute hyperdistention occurring in a chronic dilatation* of the stomach, as an etiological factor, and as the attacks are acute, I have placed these cases under the heading of acute dilatation.

ETIOLOGY OF CHRONIC DILATATION OF THE STOMACH.

Nothnagel holds the view that some of our cases of dilatation of the stomach have existed for many years and that it may be traced back to improper methods of feeding at an early period of life.

In this regard, I wish to call to your attention the average capacity of the stomach in infancy, as described by Dr. L. Emmett Holt: at birth, one and a half ounces; at three months, four and a half ounces; at six months, six ounces; at twelve months, nine ounces. In the act of nursing, the baby works for its dinner, so to speak, and the process is slow. On the other hand, milk is taken from the nursing bottle with greater ease and with much greater rapidity and the infant is often assisted by the fond mother, or nurse, by "tipping" the bottle to an extreme degree. You will appreciate that I am now speaking of the mere mechanics and not of the quality of the food. In addition, I have often seen a nine-ounce bottle of milk given at one feeding to a baby six months old, or even younger, when the stomach capacity is much less than that of the milk bottle. Fortunately beneficent nature again intervenes in most cases and the stomach ejects the excess of food. Overfeeding and chronic indigestion are causes of dilatation of the stomach in infants and in young children and a great responsibility therefore rests upon the family physician, in the proper regulation of the food of the young patients entrusted to his care. Rickets is another causative factor in the production of dilatation of the stomach.

In young children, as I have already called to your attention, acute dilatation of the stomach may be productive of convulsions. Holt believes *intestinal putrefaction exciting convulsions* in children to be an important etiological factor in the production of epilepsy. Acute dilatation of the stomach with resulting convulsions, I believe to be a strong factor when frequently repeated in producing the convulsive habit, and some cases of epilepsy can certainly be imputed to this. In fact this will explain some hitherto obscure cases. Moreover, chronic dilatation of the stomach is, in itself, one of the causes of intestinal disturbances and of intestinal putrefaction.

Personally, I have no patience with the term "idiopathic epilepsy," believing that this is merely a confession of ignorance.

Among other etiological factors of chronic dilatation of the stomach are chronic gastritis, atonia gastrica and the "rapid bolting" of food. The latter frequently occurs among patients suffering from nervous derangements and is often a cause of gastric disturbances and of dilatation. On the other hand, dilatation of the stomach, with accompanying intestinal putrefaction are in turn frequently etiological factors in the production of nervous conditions. Spasm of the pylorus due to an ulcer and benign and malignant stenosis of the pylorus are additional causes of chronic dilatation of the stomach. With such dilatation there may be chronic gastritis, hyperchlorhydria (hyperacidity), mold in the stomach, hypochlorhydria (diminished acidity), achylia gastrica, or marked fermentation. Personally, I only practise lavage in cases with chronic gastritis with the production of excessive mucus, or where there is much retention of food with fermentation. I believe that stomach washing is too often overdone. Calcined magnesia with bismuth subnitrate for the mucus; resorcin for the fermentation, at times combined with bismuth, or benzoate of soda, as an alternative and olive oil in cases of benign stricture as a palliative, are of value. Each case should receive the treatment appropriate to the existing condition. Hygiene, diet, massage, electricity (intragastric preferably at times) and proper regulation of the bowels are of value. Hydrotherapy will often be found useful to tone up the general condition. I believe that the domain of surgery should be somewhat enlarged, for example, in some cases of gastroptosis and stomach dilatation and that a certain class of cases of chronic gastritis with marked dilatation and excessive production of mucus, which do not yield to prolonged treatment, might receive benefit, from proper drainage by gastro-intestinal anastomosis. I have in view one such case on my service at the West Hospital.

GASTROPTOSIS.

In speaking of gastroptosis, it is not my intention to describe typical Glenard's disease, enteroptosis, gastroptosis and nephroptosis, with the

[1] I have recently had under observation a case of rheumatic endocarditis, complicated with sudden attacks of tachycardia—the pulse running from 210-250 per minute. Careful observation demonstrated that these attacks were due to acute dilatation of the stomach from overdistention with gas. These attacks have been entirely eliminated under proper diet and the administration of resorcin.

symptoms as given in the text-books, but to refer only to those cases which vary from this fixed type so familiar to you all. There may or may not be nephroptosis, and enteroptosis in some cases cannot be detected by the ordinary methods of physical examination. Ptosis of the stomach, however, is present and, of necessity, enteroptosis accompanies it. The symptoms point chiefly to the stomach.

Hyperchlorhydria (hyperacidity) hypochlorhydria (diminished acidity) or achylia gastrica may all occur in gastroptosis. This is also true of dilatation of the stomach and hence the determination of the position of that organ, in order to secure the best method of treatment, is of great importance. Transillumination of the stomach I consider the most scientific method of differentiation between these conditions.

The question has arisen in my mind as to whether the ptosis of the intestines invariably precedes the descent of the stomach, as is described by Glenard, and whether in some cases of chronic dilatation of the stomach the ligaments may not gradually stretch and ptosis of the stomach follow, as a primary condition, and enteroptosis be the sequel. In Case XXIX. an excellent picture of the stomach was secured and the pyloric end was clearly seen. The lesser curvature had lost its relation to the diaphragm, but just barely so, the stomach was dilated and no nephroptosis or enteroptosis could be detected. The change in position of the lesser curvature constituted a gastroptosis, slight as it was. I have seen two similar cases and these facts are certainly suggestive.

Furthermore, in gastroptosis, I believe we have the chief etiological factor in "mucous colic." Ewald has pointed out that ptosis of the colon frequently exists in this condition and Einhorn has demonstrated that gastroptosis is present in a large percentage of cases of "mucous colic," as is also achylia gastrica. Mucous colic is present also in many cases of Glenard's disease. Mucous colic is not present in all cases of gastroptosis, any more than is hemorrhage in all cases of typhoid fever. All cases of mucous colic are neurasthenic, but all cases of neurasthenia do not suffer from mucous colic.

On the other hand, there must be an underlying cause both for the neurasthenia and the mucous colic—since these two constitute, I believe, a "vicious circle" and react on each other.[1] As far as my own experience is concerned, I have been able to demonstrate gastroptosis as an etiological factor of mucous colic. The abnormal secretion of the stomach undoubtedly aggravates this condition.

It would seem that the ptosis of the intestines, which of necessity accompanies the gastroptosis and the resulting changes in the caliber of the lumen of the gut at various points, fully explain the cramp-like effort to expel the mucus and the tubular-cast shape of the mucus which we see at times. Furthermore, injections of olive oil appear to relieve the attacks of colic, just as it does given by mouth, in the case of stenosis of the pylorus. I do not believe the mucous discharge is due to a true inflammatory condition, but to changes in the circulation due to the abnormal position of the intestines. Where there is a narrowing at one point there must of necessity be a dilatation and congestion in the intestine above it.

I believe that adhesions, rectal obstruction, or irritation and other such causes given by our authorities, are merely accessory factors in the vicious circle.

During the acute attack, rest, antispasmodics, such as asafetida and light diet, as suggested by Dr. Thomson, are of value. Later, small doses of castor or olive oil, given internally, have an excellent effect. High enemata of olive oil are of service, alternating with irrigations by the Kemp tube of normal saline solution, weak flaxseed tea, or gum arabic solution (ʒii. to ʒiii.) to the quart of warm water. I have had excellent results from the injection of carbonic acid gas, as advocated by Dr. Achilles Rose. I do not believe in the immediate "ballasting" the intestines with coarse food, as advocated by some authorities, but agree with Dr. Einhorn that the diet should depend on the condition found in the stomach. The patient should be well fed, however.

I invariably apply abdominal support in cases of "mucous colic," and have always found relief therefrom. This is further suggestive of the gastroptosis and enteroptosis. Rest treatment is of value in some cases, with hydrotherapy. The bowels should be regulated and nerve tonics administered—change of climate is, at times, beneficial.

As to the general treatment of gastroptosis, we may sum up as follows: (1) Correction of the derangement of the stomach by appropriate *diet* and *medication suited to each case.* A careful analysis of the stomach contents should be made, and the motor functions noted; (2) regulation of the bowels; (3) mechanical support, to increase the intra-abdominal tension, such as (*a*) silk abdominal supporters, those manufactured by Stohlmann & Pfarre, I believe to be excellent; (*b*) bandaging, such as by the Van Valzah-Hayes method; (*c*) Gallant's corset; (*d*) Rose's adhesive plaster belt.

Regarding the abdominal belt of my friend, Dr. Achilles Rose, I may state that I have seen some brilliant results from its use. For example, I have noted a complete disappearance of hyperchlorhydria (hyperacidity) and a return to normal conditions, as a result of the mere mechanical support alone. It affords a support[1] to the organs and allows a return to their normal functions, and there will frequently be increase in weight under this method. I think one can never claim to replace

1 To further substantiate this view, I have under observation a patient with typical attacks of mucous colic, which began only two months ago. These commenced a month after confinement. She has enteroptosis and gastroptosis, due to insufficient support of the abdomen after the birth of her child. The attacks began a month after she was confined. She is not neurasthenic and is only nervous at the time of her attack. This is certainly significant.

1 Recently at my clinic at Wards Island, Dr. Graham-Rogers transilluminated a stomach before and after the application of Rose's belt, and found the stomach in this case to be elevated four inches, with the belt applied.

the ptosis, but the general tone is improved and correspondingly the symptoms. The advantage of the Rose's belt is that it cannot slip and become displaced. If a patient objects to any of the most satisfactory material yet in use. It is looser in texture than the other plasters and the sweat readily evaporates through it. It can be worn longer and with practically no irritation. It

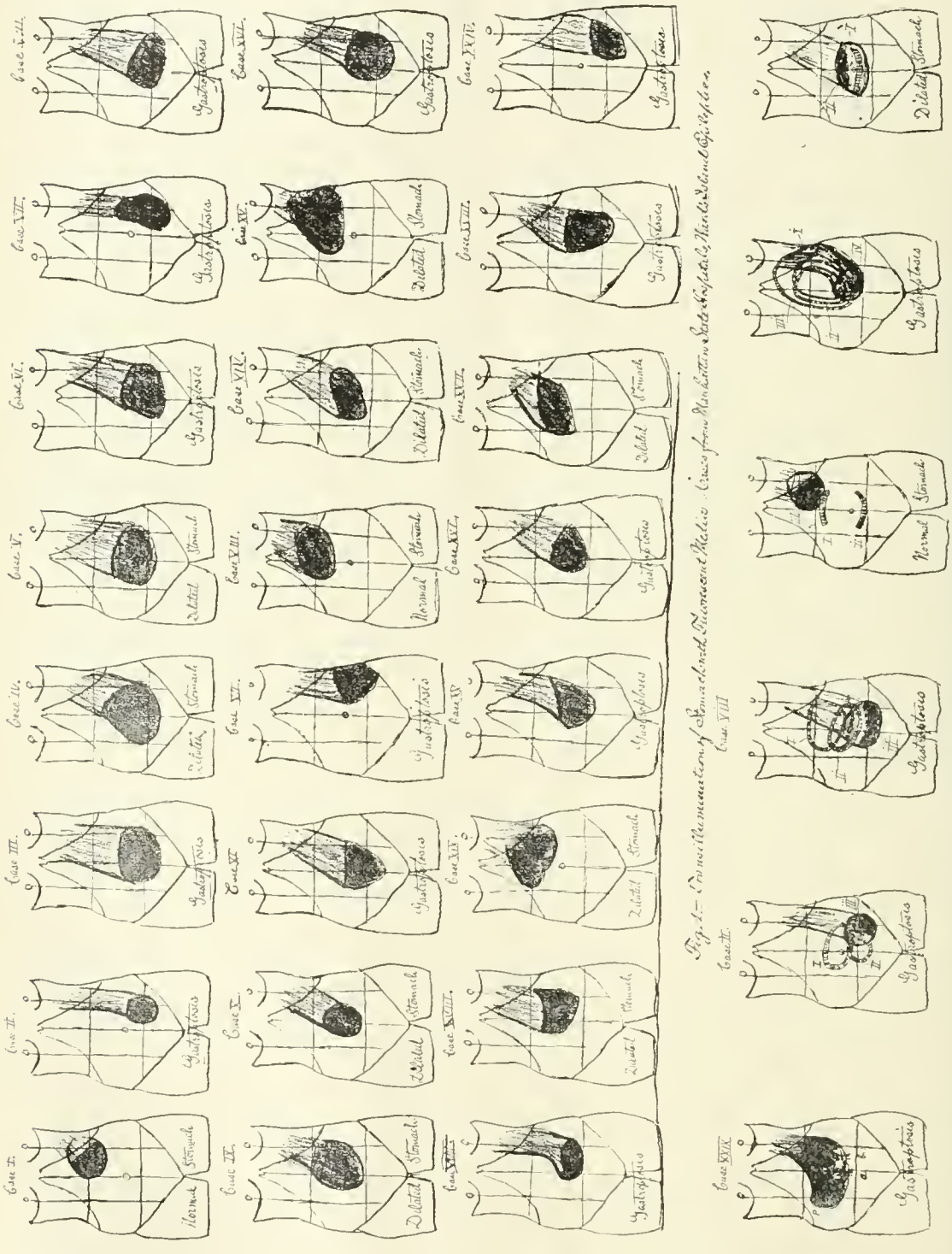

Fig. 1.—Demonstration of Stomach and Movement Ratio. (Kemp from Manhattan Medical Register, Nov. 15, 1898.)

Fig. 3.—Conservative Method of Treating the Ptosis of the Stomach.

its features, it can be readily explained that it is placed there as a splint is applied and objections are thus readily overcome. I have employed recently for this belt, rubber plaster on moleskin, manufactured by Johnson & Johnson, and find it is superior to the ordinary rubber adhesive and even to the zinc oxide plaster.

I wish to state right here, that the question of abdominal support and the various methods to secure it, I have investigated with a perfectly open

and unprejudiced mind and I do not hesitate to say that I now employ the technic described by Dr. Rose, believing it to best fulfil the indications. On the other hand, some of my medical confrères totally discard abdominal support and rely on massage and on exercise to restore the tone of the parts. In some cases of gastroptosis, we may endeavor to secure our results by "putting on fat," by means of the rest cure and selected feeding. In this event, I cannot recommend too highly the treatment of my friend Dr. John Russell of the Post-Graduate Medical School, such as he follows in cases of tuberculosis, and which is doubtless familiar to you all. I believe that this has a great future in the treatment of certain cases of gastroptosis.

Having concluded my observation on dilatation of the stomach and on gastroptosis, I will present some drawings of forty cases from the Manhattan State Hospitals, Ward's Island. Space only allows me to show some of these illustrations.

These demonstrate the position of the stomach in epileptics recently examined. The anatomical regions were marked out in blue pencil on the abdomen of each case and during transillumination of the stomach, the outlines were drawn in colored pencil. These markings were redrawn directly from each subject on paper stamped with a special instrument, giving the anatomical regions. The results secured were as follows: Females, total number, 34 cases; gastroptosis, 16; dilated stomachs, 16; stomach in normal position, 2. Males, total number, 6 cases; dilatation of the stomach, 5; stomach in normal position, 1.

The motor functions of the stomach and the analysis of the gastric contents were made with all these patients. These factors were considered in making the diagnosis. There was abnormal secretion in the stomachs occupying the normal position. These data are certainly suggestive.

Comparative Methods of Locating the Position of the Stomach.—I shall first briefly refer to the position of the patient. In the dorsal position the abdomen is most relaxed; flexing the knees and thighs increases this relaxation. The percussion note is rendered more distinct by opening the mouth and percussion of the stomach should preferably be made from above downward. The liver, spleen, intestines and kidneys should also be carefully examined. On the other hand, the stomach with the patient in the dorsal position falls somewhat away from the abdominal wall and in this regard is not as easy to map out. The position of its contents, for example, when water is administered for the purpose of locating the stomach, is not as favorable for percussion as when in the standing position. As a demonstration of the fact, I have administered a pint of fluorescin solution with the patient lying on the back, inserted the light and endeavored to transilluminate the stomach, with no satisfactory result. As the shoulders are gradually elevated, the outline of the stomach becomes more visible until, finally, excellent results are secured in the sitting and especially in the standing position. In muscular subjects, however, the objection can be made that the walls of the abdomen are more tense when the patient is upright and hence percussion is more difficult.

When employing percussion, therefore, it is my custom to examine the patient in the dorsal, semi-oblique and standing posture, if possible, and to form an opinion from the combination of the three methods.

At this point, I wish to speak of the changes that occur in the position of the stomach due to the administration of food or water. In our works on anatomy and diseases of the stomach the statement is made, that the empty stomach lies for the most part beneath the ribs on the left side, extending a short distance below their border; when partially filled it descends midway between the ensiform process and the umbilicus, and when full, to within a few finger-breadths of the umbilicus. Now, this is true when the patient is in the dorsal position, since the suspensory ligaments of the stomach are then relaxed, and as the organ fills up it gradually gradually gravitates downward. In the standing position, however, the stomach, even when empty, descends to the full length of its suspensory ligaments at once, and its lower border is practically at a constant level, or within about an inch of the same, whether the organ be full or empty. I am aware that this statement will excite immediate dissent from many of you, but it is capable of easy proof. For this purpose, I devised a simple instrument known as the "stomach whistle" (Fig. 2).

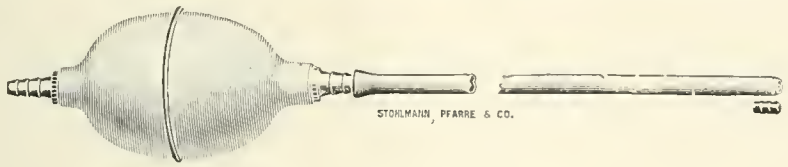

Fig. 2. Dr. Kemp's Stomach Whistle.

This consists of a rectal tube of small caliber, with a whistle in the end. To the other extremity is attached an ordinary stomach aspirating bulb without valves. The tube is inserted, the finger, placed over the open end of the bulb and a single bulb full of air is forced into and aspirated out of the stomach, by rapid and short intermittent contractions. This entirely eliminates the possible chance of distending the stomach with air and the organ remains practically empty. A stethoscope is placed over the abdomen and the point of greatest intensity of sound is marked by a cross with a colored pencil. The tube is pushed in and

out and the various points of sound are marked, the lowest is the lower border of the stomach. The ear, of course, can be applied in place of the stethoscope. Transillumination of the organ was then performed and the lower margins absolutely corresponded. This is also a further evidence of the accuracy of transillumination, as well as of the value of the stomach whistle. Space will not permit in this article to exhibit all the drawings shown at the meeting, but Case XXIX. (Fig. 3) demonstrates the above statements. Five observers located the lower margin of the stomach by means of the stomach whistle at *a* and *b*, on the same transverse line. Transillumination demonstrated their accuracy.

I am perfectly cognizant of the method of administering water and then blowing air into the stomach through a tube—but the "bubbling sounds" only give the level of the fluid and not accurately the lower margin of the stomach. The whistle is therefore of value in this regard, though it will not necessarily differentiate between dilatation and gastroptosis.

Other Methods of Locating the Position of the Stomach.—Various methods were tried on each individual case, as a basis for comparison, and, as a check, transillumination of the stomach was employed as the final procedure in every case. The results were drawn at the time with colored pencil on every patient and then transferred to drawing paper. Fully twenty-five or thirty physicians have examined these cases at my clinics and the results are not those of a single biased observer.

1. *Inspection.*—An abdomen, concave above, convex below, a sulcus in the median line and bulging in the inguinal regions, is suggestive of gastroptosis. However, I recently observed a simple dilatation of the stomach with these conditions existing. Observation of the peristaltic movements is often of value. Some claim that by mere inspection of the abdomen that they can locate the position of the stomach. We tried this method many times and without success.

2. *Inflation with Carbonic Acid Gas.*—This may be obtained by the administration, separately, of the ingredients of a Seidlitz powder, or preferably, by giving sodium bicarbonate and tartaric acid in separate solutions. So often did we fail by this method that I do not present drawings of these experiments. The method is disagreeable for the patient and it is impossible to regulate the quantity of gas.

3. *The Administration of Small Quantities of Soda Bicarbonate and Tartaric Acid With the Patient in the Standing Position.*—In some cases one can approximately map out the lower border of the stomach, by listening to the "sizzling sounds" with the stethoscope. This may at times be serviceable.

4. *Inflation of the Stomach With Air.*—This method is advocated by many authorities. One can attach to the stomach tube a bulb which has been previously tested, by noting how much water each compression of the bulb will displace. By this means we can fairly definitely measure the quantity of air employed, though there is some escape about the tube and often into the intestines. This method, however, may be a cause of great discomfort, often overdistends the stomach, so that we do not obtain its true dimensions and it may even be a source of some danger.

On many occasions what was apparently stomach-becoming to the eyes, protuberant on the abdominal wall, was proved by transillumination to be intestines forced out forward and laterally by the stomach. By inflation with air, a diagnosis of dilatation of the stomach was thus made which proved by transillumination to be gastroptosis; for example, Case II, in Fig. 3. I is position found by air inflation; II, by water inflation; III, by transillumination; also in Case VIII, in Fig. 3.

Let me say right here that I found inflation with water next in efficiency to gastrodiaphany. Water inflation, however, will fail at times, as I shall shortly demonstrate. On the other hand, I have had some successes with air inflation in detecting dilatation of the stomach, whereas it has frequently failed in gastroptosis, the intestines being dislocated and simulating the stomach, as in Case II, Fig. 3.

Some authorities claim that by dilatation with air and placing the patient in a good light, they can secure a shadow of the lesser curvature and differentiate between dilatation and gastroptosis. In subjects with much adipose tissue, or with thick abdominal muscles, I hardly see that it can be practical. So far I have not seen this method successfully applied.

5. *Simple Percussion.*—This method failed to locate the correct position of the stomach in a considerable percentage of cases. The examination was made both in the dorsal and standing position; with the stomach empty, and after the administration of a single glass of water. As a demonstration illustrating these features I can only submit here Case I, in Fig. 3. I and II show the upper and lower borders of the stomach both in the dorsal and standing position as apparently demonstrated by simple percussion, the diagnosis being "dilated stomach." III shows the true position of the stomach as found by transillumination; stomach in the normal position.

6. *Auscultatory Percussion.*—This method frequently fails. (See III, Case XVII, Fig. 3.) The stomach was apparently a simple dilatation—when actually by transillumination it was proved to be a case of gastroptosis.

7. *Reichmann's Auscultatory Percussion Rod.*—This consists of a short ivory rod, with circular grooves and intervening projections, somewhat like the handle of a large ivory knitting needle. The rod is pushed firmly down over the stomach at a right angle to its surface (in a vertical line to the abdomen) and is gently stroked with the finger. The stethoscope is applied over the organ and the "pitch" carefully observed. When the rod passes beyond the limits of the stomach a change in "pitch" is observed. It is claimed that the boundaries of the organ can thus be mapped

out. Case XVII, Fig. 3, serves as an illustration, I, representing simple percussion, dorsal position, with the stomach empty and also after the administration of a pint of fluid; II, auscultatory percussion with Reichmann's rod, under the same conditions; III, simple auscultatory percussion. All these show dilatation of the stomach; IV, transillumination of the stomach shows gastroptosis, which is correct.

8. *Inflation of the Stomach with Water.*—This method seems a fairly good one, in fact I consider it, next to transillumination, the best technic to employ when we desire to map out the position of the stomach. It is much easier to differentiate between the dulness, which we thus secure, and tympanites, than it is between different degrees of tympanites. In all, a pint to a pint and a half of water should be given in divided doses. In case XIV, Fig. 3, I represents the lower margin of the stomach thus mapped out; II, the area of transillumination. They practically correspond. In some of our cases inflation with water failed to give us correct results, however.

9. *Inflation of the Intestines with Air.*—No accurate results can be obtained—and great discomfort to the patient results.

10. *Inflation of the Intestines with Water.*—This method is painful, I believe inaccurate, and before sufficient water is injected, it is ejected.

11. *The Ideal Method to Locate the Stomach Is by Transillumination.*—Originally devised by Dr. Max Einhorn.[1] Subsequent laparotomy on the living subject, experiments with the cadaver and the stomach whistle all demonstrate its accuracy. For your benefit, I show you this evening both the Einhorn and the Lockwood gastrodiaphane and the battery with rheostat, made by Stohlmann & Pfarre. It is possible, however, to attach the instrument directly to the cells, though there is some danger of burning out the light. I employ six to eight dry cells, preferably the latter. The Lockwood light possesses the advantage of being very small, easy to manipulate and does not gag the patient. Dr. Lincoln, of Brooklyn, has an instrument somewhat similar. One can readily improvise a dark room by pinning a blanket over the window. The examination should be made on an empty stomach. As an improvement in technic I have of late employed fluorescent media for transillumination. You will find an abstract of this work in a recent issue of the *Post-Graduate* and in the *New York Medical Journal* and *Philadelphia Medical Journal, Consolidated,* February 13, 1904, entitled "Fluorescin in Transillumination of the Stomach." A subsequent description of the experiments will be given in the Medical News, in the near future.

There are three fluorescent media so far found to be of value: (1) Bisulphate of quinine grs. x. in a pint of water. The addition of m. v. of acid phosphoric dilute intensifies its action. The same amount of acid sulphuric dilute may be substituted. The reaction of the quinine solution is, in itself, acid and the fluorescence a very pale violet. Increased acidity intensifies its action and fluorescence disappears if the solution is rendered alkaline. (2) Esculin; this is derived from the *Æsculus hippocastanum* (horse-chestnut), indigenous to Europe. Fifteen grain doses have been used in malaria. One can employ small doses, gr. ⅛ to gr. ½ in a pint of alkaline solution, which gives a blue fluorescence. This preparation is difficult to secure. (3) Fluorescin, phthalic anhydride (5 parts), a naphthalin product and resorcin (7 parts) heated to 200° C. It is a reddish powder, faintly soluble in water with a neutral reaction and practically gives thus no fluorescence; soluble in alcohol and in alkaline media, giving a green fluorescence like liquid opal. It has been employed to detect ulcers of the cornea. It can be secured from Merck & Co., and is extremely cheap. No further literature was obtainable.[1] I therefore injected one to two grains of fluorescin into dogs and rabbits in alkaline and alcoholic solutions, with no resulting effects either physiological or local. Later, assisted by Mr. Ferry, the chemist of St. Bartholomew's Clinic, we further investigated its properties. He suggested to me the addition of glycerin to intensify the flouresence and we found that the hydrochloric acid of the stomach must first be neutralized. The patient should first be given a glass of water (eight ounces) in which fifteen grains of bicarbonate of soda have been dissolved. A second glass of water (eight ounces) is then administered, in which are dissolved the same amount of sodium bicarbonate, one dram of glycerin and gr. ⅛ to gr. ¼ of fluorescin. One to two ounces of lime water may be substituted for the soda bicarbonate. Curiously enough, as we increase the fluorescin in strength, fluorescence diminishes and colorization begins. By means of fluorescent media, I have found it possible to transilluminate the stomachs of fat subjects, that was formerly unsatisfactory, to examine for tumors and the location of the stomach with greater accuracy, and I believe that I can fairly state that the brilliancy of the transillumination is increased over one-half.

Radio-Active Solutions.—The relations of radio-active solutions and the X-ray to fluorescence interested me greatly. Incidentally, I may say that, as a matter of scientific accuracy, I suggested the infusion of radio-active normal saline solution into animals and also its hypodermic use. We performed these experiments at the College of Physicians and Surgeons, assisted by Dr. C. T. Graham-Rogers and by Mr. J. T. Hoyt. I must say that I could see absolutely no results from the standpoint of physiological medicine and from our researches so far, I feel that radio-active solutions have no therapeutic value whatsoever. I believe that this is the first infusion of a radio-active solution that has ever been performed. There were no physiological results from the infusion, or any changes of heart action and respiration, beyond

1 Laparotomy, by Dr. Robert H. M. Dawbarn, on a case of gastroptosis, transilluminated with fluorescin, at the Manhattan State Hospital, West, Wards Island, has recently demonstrated the absolute accuracy of the method.

1 Since reading this paper, some interesting data have been published regarding the local effects of fluorescent media in diseased conditions.

those of the infusion of a normal saline solution. I show you tracings taken from this animal—the manometer being attached directly to the carotid artery and infusion given into the femoral vein. I now present for your inspection the living dog thus operated upon three days ago. You will note that the wounds are healing nicely and that the animal is in good condition. As to the value of radium, that is a different matter.

In conclusion let me say that if by these observations I shall have succeeded in exciting your interest, I shall feel that I am sufficiently repaid.

107 East Fifty-seventh Street.

EXPERIMENTS TO DETERMINE THE VALUE OF COLLARGOLUM AND ANTISTREPTOCOCCIC SERUM IN INFECTED WOUNDS OF THE EYE.[1]

BY J. H. CLAIBORNE, M.D.,
AND
E. B. COBURN, M.D.,
OF NEW YORK.

Seven and one-half per cent. of the blind are made so by injuries to the eye, usually resulting in panophthalmitis, and because of the ineffectiveness of modern methods of treatment, new and more efficient remedies are desired. Up to the present time iodoform has been most used, and with the greatest degree of success, but its method of application is difficult, and the results are not always satisfactory.

Last year the writers made some experiments to determine the value of formalin in the treatment of infected wounds of the eye, but the results did not show any special advantage in the use of this remedy, even though its innocuousness was clearly shown.

The present tendencies to combat diseases by intravascular medication has not been overlooked by the authors, and certain remedies which have been brought to the attention of the medical profession for use in combating various forms of diseases, supposed to be due to streptococcus infection, have been made the basis of experimentation, the results of which are herewith given.

Collargolum was one of the remedies used; it is an allotropic form of silver (colloidal silver) which is soluble in water in the proportion of one to twenty-five, forming a brownish solution. It does not appear to affect the constitution of the blood or lymph when injected intravenously. It is carried to all the organs, but is eliminated rather rapidly. It has some direct bactericidal action and produces a marked and rapid leucocytosis. Because it is quickly eliminated from the body, its administration must be frequently repeated. It has been used with considerable success in septicemia and pyemia, surgical infections, puerperal sepsis, sepsis of infectious diseases, skin diseases, venereal diseases, and certain muscle diseases, including rheumatism, abscesses, cellulitis, and so forth. It is injected intravenously in a one per cent. solution.

The perusal of medical literature at hand does not show that collargolum has been employed in the treatment of eye diseases by intravenous injection. It has, however, been used by inunction, employed in the form of Credé's ointment, in which form it appears to have been quite efficacious. In the collargolum experiments, the eyes of rabbits were infected by injecting two minims of a turbid emulsion of streptococci in sterilized water into the vitreous. On the following day there was pericorneal injection, iritis and exudate, into the vitreous. Treatment was now begun with a two per cent. solution of collargolum injected, in one series of animals, into the veins, and in another series, into the capsule of Tenon. Twenty-five minims of the solution were injected into the veins on successive days, but the inflammatory conditions increased, the iritis became more marked, chemosis of the conjunctiva developed, and a yellowish reflex was visible in the fundus. As the result, a condition of panophthalmitis developed and, in spite of the injection, the eyes were lost.

In another series, the injection of a two per cent. solution of collargolum was made directly into the capsule of Tenon. The injection varied in quantity from five to twenty-five minims. Chemosis was fairly pronounced after the injection, and in one animal the chemosis was so great that the pressure on the eyeball produced a pseudoglaucomatous condition, with ulceration of the cornea, which eventually caused the destruction of the eye. The discoloration of the subconjunctival tissue was sufficient to condemn this method of treatment in human subjects, whether or not the treatment had been successful. The treatment, however, was of no value, and the eyes were lost as promptly as those in the first set of experiments.

Another set of experiments was begun by infecting other rabbits with streptococcus emulsion in the vitreous. Collargolum in 100 minim doses of the two per cent. solution were injected intravenously; the results were not different from those mentioned above. Panophthalmitis developed, the eyes became soft and were eventually destroyed.

Serum.—After infecting a number of rabbits' eyes, according to the method described above, a domestic antistreptococcus serum was employed in another series of experiments. After an inflammatory process had begun this was injected in ten minim doses into the capsule of Tenon. The result was equally disappointing. The purulent process developed into a full-blown panophthalmitis and the eyes were lost.

Antistreptococcus serum was injected in other animals whose eyes had been previously infected. The quantity varied from five to ten c.c., and was injected intravenously. These eyes were destroyed in the usual way. One animal received an injection of serum into the capsule of Tenon, and while the injection was being made from the glass bulb which was supplied with a rubber ball to expel the serum, a small quantity of air was

[1] Received for publication March 15, 1904.

also injected. The rabbit was placed at one side, and while attention was directed to the treatment of the other animals, the rabbit died. The time was certainly less than five minutes. The autopsy showed a frothy clot in the right ventricle and air in the coronary arteries.

Still another series of experiments with the antistreptococcus serum injected both intravenously and into the capsule of Tenon, resulted in the same way. The eyes were all lost by panophthalmitis.

An examination of the eyes of the animals which were employed in the preceding experiments, a month later, revealed various interesting conditions: in some iris *bombé*, occlusion, softening and pannus; in others, posterior synechiæ, new formation of blood vessels in the iris, yellow reflex from the fundus, minus tension, and pannus.

To determine the value of these various forms of treatment in combating phlegmonous inflammation of the orbit and eyelids, some of the same emulsion which was used to infect the above-mentioned rabbits, was injected through the lids into the orbit. It was found impossible to produce any inflammatory reaction by the use of this method of infection, and hence, experiments to that end were abandoned.

For another series of experiments, we were kindly supplied by Parke, Davis & Co. with a liberal quantity of their antistreptococcus serum, and by Schering & Glatz, with a quantity of Aronson's antistreptococcus serum. Rabbits were infected as before by injecting streptococcus emulsion into the vitreous. These experiments were carried on in three ways: (1) by injecting the serum into the capsule of Tenon, (2) by injecting it into the capsule and into the subcutaneous tissue, and (3) by the hypodermatic method alone. The quantity injected into the capsule of Tenon was generally about 30 minims: with the combined method the injection into the capsule was 30 minims and into the subcutaneous tissue of the neck, 10 c.c.: in the subcutaneous method alone, 10 c.c., were injected each time. The experiments were failures in every instance, and as it was thought that the inflammatory process made too great headway in twenty-four hours, which was the usual time for commencing reaction after the initial infection, the injections were made from twelve to eighteen hours after the primary injection of streptococcus emulsion. Without exception, no difference could be noticed in the course of the disease, and the treatment seemed to be without any favorable action to inhibit the inflammatory process. Considerable hopes had been raised that Aronson's serum would prove effective in the treatment of these animals, as Aronson's serum is the one which has been most successful in the treatment of infectious diseases in animals.

A review of the ophthalmological literature reveals only one instance where serum was employed in the treatment of eye diseases. Attanasio (Archivio di Ottalmol., vol. ix., Jan., 1902, p. 241) employed Marmorek's serum in the treatment of eye diseases and he found the serum treatment quite effective. The serum relieves the pains after a few hours. If the injection is made at the commencement of the purulent infection and in sufficient quantity, it neutralizes the toxines taken into the circulation, it diminishes the virulence of the streptococci and other microbes (which produce suppuration) by increasing the defensive powers of the tissue. He recommends it as a preventive of postoperative infections, but in such cases it ought to precede the operation.

Remarks.—The intravenous injection of certain remedies, such as bichloride of mercury, formalin, protargol and other antiseptics, has shown that many of them act favorably. Certain ones, however, depress the system to such an extent (whether by affecting the elements of the blood or by other poisonous action, is immaterial in this paper), that, in experimental cases the animals which receive maximum non-toxic doses die more rapidly than animals not so treated.

While the writers are well aware that experiments on animals are not conclusive, they certainly afford an indication, at least, of the action of various medications on the human system. In view of the fact that collargolum has been used with great success in the treatment of various septic processes in human beings, conclusions drawn from these experiments should not stand in the way of the treatment of similar ocular infections in human beings by collargolum.

It is known that treatment directed against encysted collections of pus, are not so favorably acted upon by these methods as general infections are. In the eye, the processes are limited by the coats of the eyeball, and it is not impossible that the conditions are comparable to a pus collection elsewhere. We know that exudative processes in the eye are but slowly influenced by any form of treatment, local or general. So far as these experiments go, there is nothing to indicate that collargolum or serum should not be employed in the treatment of certain ocular diseases in human subjects.

Local treatment by subconjunctival injections of collargolum solution are certainly not to be recommended. Whether these remedies act by leucocytosis, by antiseptic action (as in the case of collargolum), or by some inhibitive process (as in the use of serum), is as yet unknown. There seems to be no good reason why serum treatment should not be tried in all forms of purulent eye diseases. It has been found successful in the treatment not only of pure streptococcus infection, but also of such infections mixed with staphylococci.

Of course, not all infectious processes in the eye are caused by the streptococcus. The staphylococcus and the pneumococcus have both been found in purulent diseases of the eye, but in view of the generally accepted idea that streptococcus infections are generally fatal, the use of antistreptococcus serum, being harmless, may be of benefit, even though selective in its action.

Some writers claim that all streptococci are alike, while others claim that there are various forms of these bacteria, and seem to prove their assertion by *agglutination* methods.

It is found that the preparation of efficient sera requires certain methods, it being necessary in general that the sera be prepared from virulent cultures. Some hold that the cultures should be passed through intermediate animals, while others claim that, by so doing, the specific and selective agglutination action of the serum thus prepared is not obtained, and prefer serum directly prepared. An interesting fact is that the blood of diabetics seems to impair the action of certain sera.

The reasons for failure of the action of antistreptococcus serum may be ascribed to the variability of the streptococcus; to the fact that few septic processes are simply streptococcus infection alone, but are more often mixed; to the improper preparation of the serum from cultures indirectly, cultures not taken from cases of a similar kind for which the remedy is applied; or finally to the application of serum in insufficient quantity or after the process has become so far advanced that any treatment would be ineffectual. It may not be impossible that the serum deteriorates rapidly after its preparation. In certain experiments on animals it has been shown that the doses of serum must be enormously increased the longer the treatment is begun after the primary infection. In view of the fact that any treatment of infectious processes in the eye is so unsuccessful, the writers recommend the employment of serum in the treatment of such cases.

A word of warning should be given in regard to the use of serum containers now generally placed on the market. The unfortunate result of death by air embolism after subconjunctival injection of serum from one of these containers supplied with a rubber bulb, makes it necessary to recommend the exercise of considerable care. The more recent serum receptacles, prepared or manufactured in the form of a glass syringe, seem to avoid any possibility of death from air embolism.

Conclusions.—(1) Collargolum is ineffectual in preventing the spread of purulent processes in the eyes of rabbits, whether used intravenously or by injection into Tenon's capsule. (2) Antistreptococcus serum does not appear to exercise any favorable influence on purulent processes in rabbits' eyes.

Punton Sanitarium.—Dr. John Punton, Superintendent of the Punton Sanitarium or Home for Nervous Invalids, at Kansas City, Mo., is adding a large addition to the sanitarium building in response to an increased demand for accommodations by patients. There is also being built a large extension to the verandas, which will be used by the guests for places of recreation. The management of the sanitarium highly appreciates the support received from the medical profession, and has great confidence in the continued success of the institution.

PUERPERAL SEPSIS.[1]

BY SWITHIN CHANDLER, M.D.,
OF PHILADELPHIA.

This subject has been the theme upon which the poet and the scholar have vied with each other in giving warnings and admonitions, not always wise, but nevertheless, sincere. To rehash the history and words of authors would be only to tax one's patience, and add nothing new. Therefore, we will not speak of the cause, symptoms, and ancient history of this puerperal sepsis, but try to present to you views which it is believed will be new in regard to the surgical treatment, and the value of the study of the respirations in this trouble.

In my judgment it is a subject that is open to new suggestions, because it is acknowledged that the present treatment of puerperal sepsis is not all that could be desired. John Clark, speaking at the County Medical Society in Philadelphia, made the statement that hysterectomy had failed to fulfil this mission, and as this is the last operation brought forward, it cetainly leaves us in the same position in which we were before its introduction.

Knowing this to be the case, we were stimulated to endeavor to aid in the solution of this problem, which in so many cases not only causes the physician to lose his case and family, but so often injures his reputation. The operation which we suggest is new to me, and if it has been done before we performed it, it is unknown to me.

Pryor, of New York, read a paper in Philadelphia, we understand, upon this subject, but I did not hear the paper, and only a part of the debate, so I know not his position in the matter. What we have been doing for the last six years in addition to the general treatment, etc., so well known, is the following: Make an incision posterior to the cervix in the posterior vaginal wall; then pass a pair of long blunt-pointed forceps, slightly curved, in the cervical canal, up into the cavity of the uterus; puncture the posterior wall in the center near the top of the uterus. Then introduce with two fingers a piece or strip of iodoform gauze through the posterior vaginal opening previously made, clasp the gauze with the forceps and drag it through the uterine wall and out through the vagina. Repeat this by puncturing the uterus on each side, but posteriorly and just about the middle of the body, drawing the gauze through in the same manner as in the first attempt.

Thus, one will see, we treat the uterus as a thoroughly infected organ deserving heroic treatment. We feel that we have been and are justified in this procedure, and will report four cases from a list of twenty so treated, and made deductions from these, being well aware that before this is proven to be the best treatment, many cases must bear testimony:

Case I.—Patient, thirty-two years old, mother of two children. Supposed to be in perfect health

[1] Read before the Northwest Medical Society of Philadelphia, March 1, 1904.

previous to confinement. Child born on March 2, 1898. On March 4, forty hours after labor, patient had a chill, temperature rose to 104° F., pulse 130, respiration 38. March 5, temperature 105° F., pulse 140, respiration 40. Face pinched, anxious and flushed. Lochia scanty and somewhat offensive, general perspiration over entire body.

Same evening cleaned bowels with stimulating enema. Gave tincture digitalis, 10 m., hypodermically, and proceeded to etherize case. After most careful preparation, curetted, removing piece of placenta, uterine lavage with ten quarts of plain sterile water, and one quart of normal salt solution, opened posterior vaginal wall, investigating with finger, tubes, ovaries, etc. Then passed forceps through uterus and withdrew gauze, as before mentioned, leaving same in to drain, thus forming a U of gauze, entering the vaginal opening and leaving through cervical canal and out of vagina. Quinine sulphate 20 grains, given every three hours, as after-treatment.

March 6, patient generally improved. Temperature 103° F., pulse 120, respiration 34. March 7, still improving; temperature 101.2° F., pulse 108, respiration 30. Continued to improve and made good recovery. Drains removed on sixth day after the operation and replaced by uterine and postcervical gauze drainage only. All drainage removed on thirteenth day.

Case II.—Patient twenty-six years old, first child. Normal until birth of child, as by examinations. Labor on July 10, 1900. Was greatly torn in cervix and posterior vaginal wall into uterus. Repaired immediately. Same evening, temperature 104° F., pulse 140, respiration 40. Continued to rise until fifth day, then temperature 104.2° F., pulse 124, respiration 36. Operated upon same procedure, also cutting stitches previously inserted. Sixth day, temperature 103.2° F., pulse 120, respiration 30. Seventh day, temperature 101° F., pulse 118, respiration 30. Continued to fall until twelfth day; all normal, dressings removed and others substituted as before. Recovered.

Case III.—Patient, forty years of age. Mother of six children. Labor began August 15. Was in labor for twenty hours, when version was performed. Cervix and posterior vaginal wall torn. Repaired immediately. Temperature at the end of six hours, 104.2° F., pulse 128, respiration 40. Third day, temperature 106° F., pulse 154, respiration 44. Operated. In addition to operation aforesaid, because of infiltration and swelling of the tubes, ovaries and broad ligament these were punctured and relieved of a yellowish discharge containing many streptococci. Following day, temperature 104° F., pulse 140, respiration 40. Third day, temperature 103° F., pulse 140, respiration 36. Fourth day, temperature 103° F., pulse 120, respiration 32. Fifth day, temperature 102° F., pulse 120, respiration 30. Gradually, with fluctuations, temperature, pulse and respiration returned to normal, and patient made a slow recovery.

Case IV.—Patient, thirty-nine years of age. Married, mother of eleven. Possibly had a right pus tube for many years; time unknown. Craneotomy performed on child Nov. 6, 1902, and child delivered. Mother was horribly lacerated, and as there was so much shock, the physician did not repair the injuries. Posterior fourchette and sphincterani torn through, cervix torn almost up to uterine artery. Great shock followed.

On seventh day after labor, temperature 105° F., pulse 135, respiration 34. Operation and same treatment as described above. Patient was afflicted with a venous thrombus on left side, and was confined to bed for ten weeks, but finally recovered.

One subsequent case upon which we operated died two hours after, but I think the operation was attempted too late. It was on the ninth day, and the woman was in a condition of collapse.

Some Objections.—(1) We will see at a glance that there are certain cases where the mildness of the infection makes this operation unwise. This is admitted, and such operation is not advised. (2) Some will believe it makes another wound, and is therefore another source of infection. (3) Cases like Case I might have recovered upon removal of the placenta. (4) Result in labor.

The first objection is admitted. As to the second, the uterus is generally already infected, and where it is not, experiences up to date do not prove the objection, but rather the contrary, as in Case I. As to the third, cases may and do recover after removing retained membranes, but such cases as a rule are mild infections at the start, but afterward if not removed a genuine infection takes place, and the operation is demanded. Regarding the fourth, results in after-pregnancy and labor are only theoretical.

Briefly for the operation one can say: (1) It is conservative; (2) it is easily performed; (3) it is logical, as it gives drainage to an infected organ and parts; (4) it recognizes a true condition and treats it accordingly; (5) so far it has met with the best results of any method, in my hands.

Because this paper is longer than expected, we will only briefly point out one fact noticed in these cases, and that is the great danger signal in puerperal sepsis is the rapid respiration. Many cases of high temperature and pulse almost beyond belief have recovered, but when respiration runs from 45 to 50 the gravest condition is manifested. In order to demonstrate this, we present a chart for inspection, and you will quickly perceive the rapid respiration, and that it is not in rhythm with the temperature and pulse.

Just when the patient seemed to improve generally (with the exception of a bronchitis which supervened) and in the words of Dr. Cadwalader, the case evidently was recovering nicely, the respiration became rapid. Although the temperature was almost normal, the pulse had returned to a safe condition, the respiration was the only sign that forewarned death. I wish to thank Dr. Edith Cadwalader for the courtesy of the loan of the chart.

VACCINATION AND THE LAW.[1]

BY NELSON G. RICHMOND, M.D.,
OF FREDONIA, N. Y.

At a meeting of a liberal club, the subject of the evening was quarantine. The paper was able and appeared complete. But in the discussion which followed it was evident that from design or otherwise vaccination had not been mentioned. Consequently it became the conscientious duty of a lawyer (who, by the way, was an intimate friend of the reader of the paper), to begin a tirade on vaccination, holding it up to ridicule and vividly picturing the horrible results which follow its practice. The audience was an intelligent one, and it was evident that the antivaccinationist had a popular following.

It happened that at this time the City Board of Health had been enforcing the vaccination law in its relation to the public schools. The willing ones had been vaccinated and the unwilling ones were objecting and opposing the enforcement of the law, with the usual embarrassment to the Board of Health. The State Board said the law must be enforced, and the local board did its very best, with the customary result of exciting animosity and vituperation, and in the end having its provisions evaded by many.

At a meeting of a medical society of two adjoining cities, composed of the physicians in active practice of both schools, a resolution was introduced that inasmuch as scarlet fever was known to be present in one of the towns, the society petition the Board of Health to suspend the enforcement of vaccination, until such time as the city was found to be free from contagious disease. The discussion was very spirited and there was by no means a unanimity of opinion; and while the resolution was lost, it was evident that there were some present who were either lukewarm on the subject or were disbelievers in the efficacy of vaccination.

Smallpox was found in a neighboring city of an adjoining State and the Board of Education began an intelligent effort to enforce the law in its relation to children attending the public schools. The lives of the superintendent of those schools and the Board of Education were not enviable ones from that time on. The opposition organized and gathered within the folds of their banner a very respectable, determined force. Legal counsel was employed and plans were laid to bring action against the superintendent in every case where it could be proven that children had been in attendance upon school without a vaccination certificate. They reasoned that long before the final case had been reached the board, sick and tired of the contest, would drop the matter, and then their children would be admitted without vaccination.

In order to meet this strategy the superintendent, acting under the advice of the board, engaged two of the ablest lawyers obtainable to defend the case.

In the test case the superintendent of schools was brought before a justice of the peace and was convicted of admitting to school a pupil without a certificate of successful vaccination. Defeat was admitted, a necessity by the defense, before the trial was begun. Their only hope was to find flaws in the record for the docket, which when once made and sworn to could not be altered. By diligent search they did find two flaws, so that by bringing these into prominence and by using a peculiar form of review trial, they prevented the case being reopened and won the suit. The prosecutors were really fighting a battle contrary to their convictions, to intimidate the Board of Education, which was the real target, from enforcing the law.

The next move of the defense was to delay proceedings until a bill had been introduced and passed by the State legislature to stop all prosecutions that should be begun sixty days after the violation of the act. So strong a weapon did the prosecution wield that this act of the legislature was made necessary to stop further prosecutions.

I will not attempt to defend a law which permits the finding of insignificant flaws to reverse a verdict. I would rather question the wisdom of a law which courted violation.

The Board of Education in a neighboring city recently decided to enforce the vaccination law. Protests began to be made and protestants published their objections in the daily press. Public meetings were held and agitators from neighboring cities came to strengthen the opposition. One-half of the children remained away from school as well as some of the teachers. The Board of Education finally rescinded the order.

These illustrations are given as typical ones of the inconvenience, annoyance and boycott boards of health and boards of education have to endure when they make any reasonable attempt to enforce the law in regard to vaccination in the public schools.

If there is one thing in medicine which has seemed settled, it is that vaccination, skilfully performed, and repeated if necessary, protects from smallpox. And it has been with some surprise and not a little pain that I have witnessed an apparently growing hostility to an act which has saved so many lives. And the question arises, is there not one principle in medicine which is settled for all time? Is it not true that instead of a growing conviction of the truth of the discovery of Jenner there is an increasing number of the laity who disbelieve it: and that these innocents are usually headed by some one who has the degree of M.D. attached to his name?

The Public Health Law says: "No child or person not vaccinated shall be admitted into any of the public schools of the State, and the trustees or other officers having the charge, management or control of such schools shall cause this provision to be enforced."

The Compulsory Education Law, as amended at the last session of the legislature, says: "Every child between eight and sixteen years of age, in

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proper physical condition to attend school, shall regularly attend upon instruction at a school in which at least six common school branches, etc., are taught."

The Department of Public Instruction Rules: "That a child who is not vaccinated is not physically able to attend school."

One law says they must attend school. The other law says they cannot be admitted without vaccination. Some parents say their children shall not be vaccinated, and so boards of education are in a dilemma, whenever they begin the crusade. It has been held by the courts that a child shall not be vaccinated without the consent of parents, and if parents refuse their consent the board may refuse to admit such a child to school. Still the department believes "that a wise and judicious" management of this matter would result in admitting children to the public schools, even though the law as to vaccination had not been complied with, or vaccination had not been successful, only excluding them when the prevalence of an epidemic of smallpox or some other conditions might render this necessary. The department says, however, that this is only an opinion which has no force as an interpretation of the law, and if the Board of Education feel that the provisions of the vaccination law should be rigidly and literally enforced, they must hold that children whose parents refuse to allow them to submit to vaccination are not "in proper physical condition to attend school."

A great deal of trouble arises in interpreting the law in cases where vaccination has not succeeded. Some claim that they have complied with the law when they have been vaccinated, whether it works or not. Others claim that when the vaccination has been repeated and is still unsuccessful, the law has been complied with. A recent decision of the attorney-general of the State of New York says that physical compliance with the act of vaccination fulfils the law whether the vaccination is successful or not. Others, mainly health boards, interpret the law requiring vaccination to mean successful vaccination.

It is customary to class those, in whom the introduction of the vaccine virus is not followed by the different typical stages, as immune. But the conviction has been growing that the immunes are constantly diminishing in number. If vaccination is of sufficient importance to justify the expense and inconvenience, the bark of immunity is a frail one in which to be sailing. How frequently do we find cases resist the second and third attempt at vaccination, only to yield on the fourth or fifth! Yet a health board finds great difficulty in enforcing the act in those cases which choose to protect themselves with this shield.

The amendment in England, known as the Conscience Clause, had always appeared a step backward,—a movement usually experienced in any great reform. It became a law in 1896. A growing suspicion that these convictions were not well founded led me recently to address an inquiry to Dr. John Thomson, attending physician at the Royal Hospital for Sick Children, Edinburgh, Scotland, and a man of unquestioned fairness and ability. This brought the following reply, which I cannot do better than give in the doctor's own words: "The Conscience Clause was inserted in the Vaccination Act, with the approval of such whole-hearted advocates of universal vaccination as Paget and Lister, with the view of lessening the opposition to the measure. They believed that rigorous compulsion would only provoke opposition; that many of those who were against the measure strongly, on the ground of its being an interference with the liberty of the subject, would not oppose it at all if there were a Conscience Clause. It is, I believe, the opinion of the profession that they were right in this, and that the insertion of the Conscience Clause has proved a distinct success. It has removed many of the stronger men from the ranks of those who oppose the measure, so that the field has been largely left to the cranks. The amount of vaccination in England has, I understand, increased materially. In Scotland, fortunately, we have little trouble in such matters. This has always been a well-vaccinated country and antivaccination has never thriven north of the Tweed."

In the face of the beneficent results from vaccination, which I do not need to substantiate, why is it that the opposition in this country is so great? And how can this opposition be met? A business man cannot be on a board of education or a physician act as health officer, when the vaccination laws are enforced, without serious damage to his business. Sometimes the penalty of a conscientious performance of duty involves a sacrifice greater than he or his family can consistently undergo. The answer to the question is apparently easy. The remedy is more difficult.

It is generally admitted that the opposition to vaccination arises from the enforcement of the compulsory law. There is no doubt the law has effected more widespread vaccination than individual option would produce. There is no doubt that in monarchical forms of government, where wages and population do not permit the food, air space and ventilation, which we in this broad country enjoy, compulsory vaccination is essential. But in this "land of the free and home of the brave" people chafe under the restrictions of prohibition and become obstinate under the enforcement of compulsory vaccination. There is no doubt that many oppose vaccination not so much from the fact that they disbelieve in it as that they are compelled by law to undergo it.

Since the introduction of antidiphtheritic serum the case of diphtheria where it is not used is an exception. Notwithstanding the expense, the authorities have made it possible for the very poorest to have the benefit of it. The opposition in the profession has dwindled into insignificance and the knowledge of its value has become so general that a physician's popularity would hardly withstand the effects of losing one or more cases of diphtheria, where it was not used.

Would the introduction of antidiphtheritic

serum have been so rapid and universal, had there been a compulsory law regarding its use?

At the last annual meeting, at Albany, this society had the pleasure of listening to a scholarly paper on "Some Scientific and Practical Aspects of Vaccination," by Dr. P. H. Bryce, secretary of the Provincial Board of Health of Ontario, Toronto, Canada. Dr. Bryce said that opposition to vaccination is due to the fact that the laws are compulsory. He also argued that since the State, for good and sufficient reasons, accepts the responsibility of compelling people in perfect health to be inoculated with a disease, it was the duty of the State to provide qualified public vaccinators who should be empowered to vaccinate systematically: register all infants born; that naturally these men would become experts; would use only the best proven and pure vaccine; and would secure a fund of information which would be valuable. These suggestions are worthy of serious consideration.

The remedy of amending the compulsory vaccination act in the public schools, at the present time, is probably too radical to meet with popular approval in the profession, from whom such a suggestion should come. But I believe it is not too early to agitate and give serious consideration to the question—and it is quite possible that in the full fruitage of time an amendment to the vaccination act may originate in and be promulgated by the army of its friends, rather than by its enemies, who depict in florid colors the horrors of vaccination.

There is another remedy, however, which this paper might suggest, and that remedy is popular education of the laity. Notwithstanding that the centennial of the discovery of vaccination has been passed, and in spite of its acceptance by the civilized world as a preventive of great value, there is very little known of the proof of actual benefits arising from it or of epidemics stamped out by resorting to it.

At the Chautauqua Summer School for 1903 Dr. William S. Bainbridge, of New York, gave a series of lectures before the large audiences there assembled on medical topics with these subdivisions: "The Discoveries of the Middle Ages;" "Progress in Every Age;" "What Has Been Accomplished in Fighting Smallpox."

It occurred to me in reading the admirable presentation of this part of the subject that there were likely to have been many so-called antivaccinationists in the audience who needed their attention called to such recent proof as has been given in the province of Santiago, Island of Cuba, and in the Philippines. This paper suggested that not only were these people far behind the times, in opposing vaccination, but that they might become a menace to society.

The opportunities of presenting medical topics before popular audiences are frequent, and I would suggest that there be a very general presentation of the subject of vaccination. Admitting that there is usually embarrassing opposition to every attempt to enforce the vaccination law, I would suggest that it be enforced with a wise, judicious and, when necessary, firm hand; that duty may be performed, but that opposition may not be needlessly excited; that the question of amending the law, in the course of time, be given earnest thought; that each physician improve every opportunity, giving argument and citing proof that vaccination does protect; and that each individual should willingly submit to it, whenever the presence of an epidemic makes it expedient, or his physician thinks wise, regarding it as a duty he owes the community.

DIPSOMANIA AND ITS TREATMENT.[1]

BY WILLIAM LEE HOWARD, M.D.,
OF BALTIMORE, MD.

Dipsomania I consider a symptom of functional neurosis, the periodic psychic explosions being caused by accumulation of autotoxic material, this being primarily due to an unstable nervous organization allowing faulty metabolism. In individuals born with a neurotic temperament it does not take long for faulty metabolism to enter as a factor in causing inhibitory insanity. Under the conditions of living and the high mental pressure which is the lot of most of those subject to dipsomania, suboxidation is almost constant. Products of suboxidation, alexins, cause auto-intoxication, and in a certain class of neurotics this is demonstrated by an uncontrollable desire for narcotics—alcoholic drinks being those most easily obtained.

It is the existence of this condition—the accessibility of alcoholic drinks—which has thrown a veil of misconception over the morbid impulses of those suffering from periodic psychic restlessness and physical discomfort. It is not the love or passion for alcohol that causes the dipsomaniac to consume such enormous quantities of this narcotic, but because it is the one drug easily and always obtainable; and found amid genial and willing companions. No other narcotic gives the bodily comfort or produces the psychic anesthesia as alcohol in its many potable mixtures, and for this reason it is resorted to with vehemence and avidity when once the paresis of inhibition enters upon its course of a few weeks' duration. This condition I call inhibitory insanity, and its aura is well expressed by Schiller, who suffered from this functional disturbance, when he wrote of himself, "My mind is drawn different ways; I fall headlong out of my ideal world."

As I have elsewhere stated[2], the dipsomaniac is found among the intellectual classes: the physician, lawyer, literary man, artist and musician. One must be able to draw an incised line between dipsomania as a symptom of cortical disturbance, and inebriety, or chronic drunkenness, in order to successfully treat these cases. That this distinction or rather the recognition of dipsomania as a symptom of disease, is not acknowledged by many medical ruminants, is well recognized, but also is

1 Received for publication April 30, 1904.

2 "The Perverts." G. W. Dillingham Company, New York.

Hamlet's remark, that "Virtue cannot so inoculate their old stock that they shall relish it."

Clinically the distinction is readily made. The individual who demonstrates the objective symptoms of dipsomania will be found to be a man of culture and quiet habits. He will go months, and sometimes a year, living an honorable and upright life. He will probably hold responsible positions, and never be seen by his social or business friends in barrooms or lupanar dens. He is most likely to be an individual who has accomplished some great literary work, or perhaps just successfully ended a financial *coup*. At the oncoming of an attack he appears restless, does not sleep, begins to neglect his daily routine, and finally disappears from his customary place of work. He is well aware of the symptoms as they arise, and if he is a methodical man, he will so arrange his papers and affairs as to allow of their neglect for two or three weeks.[1] He knows from experience the power of the nerve storm which is soon to break, and he hurriedly and silently goes to a distant town, or if the storm breaks in all its impulsive fury before he gets away, he hies to a remote quarter of his town, where he remains to the delight of the bums and drunkards—whom he is certain to find—and who live off this individual whose energies are bent to consume all the possible quantity of liquor obtainable. With no direct recognition of self, this ambulent entity exists in an impulsive individual zone until the cortical neurones come again into their own. The recovery takes place immediately, almost spontaneously, and then there is great physical relief and psychic equilibrium: a totally different condition from that seen in the drunkard, who demonstrates all the signs of alcoholism after a few weeks of steady, constant drinking, the drunkard will have delirium tremens, the dipsomaniac mental freedom and physical comfort. During an attack the dipsomaniac, even when he has consumed liquor enough to make two men maudlin, has no difficulty in pronouncing large words or speaking long sentences; there is no evidence of dysarthria as seen in paresis or drunkenness. In this fact we can recognize that there is an overstimulation of energy in certain portions of the cortex, while other symptoms demonstrate plainly that there is partial paresis of inhibitory centers.

The unfortunate victims of this disease are generally those who work at a high and continuous mental and nervous pressure. Mental concentration for weeks or months, the whole nervous organization under forced tension, can only result in exhaustion of nervous energy, and this brings about a lessening of the inhibitory. The neurasthenic's attempt at prolonged mental application ends in mental pyrotechnics, in the class of neurotics I have indicated, the end of mental application is a craving for relief through alcohol, though both classes are suffering from a disease allied to all the other "psychokinesiæ."

The relationship between cause and effect in dipsomania is not yet well established. The microscopical appearances of the brain tissue in the true dipsomaniac has not yet been studied, as all studies, Bevan Lewis' excellent work for example, having been on those of the chronic alcoholic. That continuous attacks of dipsomania cause pathological changes in the brain tissue is undisputed. It all depends on the original inherent strength of the brain how long the downward course takes. Usually some intercurrent disease or tissue degeneration cuts off the man before he has a chance of getting old.

A true understanding of just how the autotoxic substances affect the neurones so as to cause them to functionate abnormally, a clear comprehension of what is meant by neurosis, its histopathology and pathogenesis (Mettler) are necessary before we can clear up many perplexing problems that surround dipsomania. In this disease there is paralysis of inhibition allowing the obsession for narcotics to control the individual. This is due, in my opinion, to temporary disturbances of the cortical cells from toxins, though to what extent, if any, a true organic change has taken place in the receptive center or centers in these cases primarily is always uncertain. But for practical purposes we may say in all these cases that the will runs riotously. It has been generally considered that defective moral control is uncommon, if not impossible, apart from some general but hidden impairment of intellect having a physical basis. Upon this theory Mettler pertinently remarks "that the basis of a true neurosis is a constituent change of some sort in the nerve cells; for a disturbance of function sufficient to be recognized as a disease, with the preservation of normal structure, is a logical contradiction."

The idea that dipsomania is a disease directly inherited has no scientific basis; even as a working hypothesis it is untenable with our present knowledge of heredity. One writer[1] makes the following statement: "Dipsomaniacs are found *only* among persons who have inherited from drunken parents an impellent and periodic desire for strong drink." If the author of this statement had said that dipsomaniacs were found among those of inherited unstable nervous organizations, he would have been nearer the truth. I believe it is a fact well recognized by scientists, that heredity ignores any definite type of disease. The children of "drunken parents" are more apt to be imbecile, epileptic and moral defectives—than they are to be dipsomaniacs. Morbid peculiarities — not diseases — occasionally become in some degree fixed and transmitted in certain families, but it is seldom for more than a few successive generations, for so strong is the principle of return to a normal type that the family is more apt to die out than is this principle to fail. In these cases the law of heredity prevails, but between the laws which are to act and the indefinite variety of forces and circumstances upon which these laws may operate, lies a vast stretch of uncertainty. In other words,

1 See Weir Mitchell's "Circumstance."

1 Berkley, "Diseases of the Nervous System."

a functional disease does not necessarily take the form it had in a past generation. Environment controls the phenomena; this follows the law of material progress; the fundamental cause remains the same, but the effects are governed by circumstances; hence, men are more like the times they live in than they are like their fathers. Environment is a very important factor in deciding the future of a neurotic child. The central nervous system, whatever its natural perfection must be, is extremely responsive to surrounding social conditions, and thus growth processes in it are modifiable in no small degree, hence the condition which social status implies.

If my theory is correct, it is not difficult to outline the rational treatment, but all therapeutic methods are greatly modified by the personality of the physician, a factor that enters here more than in the treatment of any other functional neurosis. The patient must be impressed with the sympathy and understanding of the physician in these cases. The unfortunate victim of dipsomania is generally well versed in the objective symptoms, and none know better than he the fearful struggles and discouraging efforts made to fight the overpowering impulsive demand for alcohol. His wife has pleaded, threatened and blamed; his family physician has told him to use his "will power," his pastor has prayed for and with him, and those few friends who are cognizant of his "periodical sprees," have kindly said he lacked moral control. He, only, realizes how little his case is understood, and silently suffers under the ignorant lash of friends and foes.

When you have been able to abort or shorten an attack in an individual who has been accustomed to weeks of mental hebetude and psychic riot and who has given up all hope of ever avoiding the stigma attached to "a spreer," you have made the first long stride in curing your patient, for it is the knowledge that at least the attacks can be shortened to a day or so, that gives hope and courage. The following case is a good example of my method of treatment:

Case.—M. B., aged fifty-two years; came to me in 1897 with a perfect history of dipsomania. His position was a very responsible one with the United States Postoffice Department. He was obliged to travel extensively. For twenty years he had had attacks of dipsomania at varying intervals, about three or four a year, during which he disappeared from his home or official desk, and remained away on the average two weeks. During this time he would stay in some dark, uninviting rum hole until found by his wife or friends. The recovery was typical, as were the memories of his acts or time. He had but little faith in the various advertised cures, as he had seen the sad results in many of these "graduates."

After explaining my ideas, he immediately cooperated with me, and thus the first difficulty was over. I first put him on a diet that avoided proteids; for it must be remembered than an exclusive proteid diet causes the formation of excessively large quantities of soluble peptones and albumoses, which have an exciting action on the nervous system and constitute a favorable basis for the development of all kinds of neuroses. For a month he was given daily a mild purgative, a natural water, and a Turkish bath twice a week; for *elimination* is the watchword with these patients. This treatment was continued for four months, except that at the end of the first month the purgative was taken but twice a week, and the bath once a week. At the end of four months I was telegraphed to go to him, the message coming direct from him and telling me where to find him. He had been on a long journey, and, upon arriving in Washington, felt a desire for some stimulant. It was not the old rabid impulsiveness, but yet there was a feeling of indecision. He was afraid to move, so sat down in the café of a well-known hotel and wired me. I found him slightly the worse for liquor, but grateful for my arrival, and he gladly went to his home with me. I immediately put him on nitrate of strychnine, gr. 1-20 every four hours, and in forty-eight hours he was himself again. For the suboxidation, which I felt was constant in this case, I taught him deep-breathing exercises. Two years he was under my treatment, having a second attack lasting only two days at the end of the second year. Since then he has been free from any feeling or desire for alcohol.

The amount of strychnine that can be given to these cases when the psychic explosion takes place is astonishing. The drug seems to be utilized in the physiologic economy, for it can be pushed in these patients to what would be an extremely dangerous point in a normal individual, without any signs of intolerance. I keep my patients on this drug for two years or more, having them take 1-30 of a grain t.i.d. for a month, then dropping the drug for six weeks to take it up again for another month. The patients are taught to understand that only by avoiding proteids as much as possible, and by constant watch over all methods of elimination, can they prevent the attacks of dipsomania. I have them thoroughly understand that there is no specific for these attacks: that it is a physiological question purely, and under their own control.

This is a very crude outline of a typical case, but as each patient is a law unto himself, as there are details as numerous as are the varied traits of the neurotic, further remarks would be surplusage. Suggestion in all cases is of great value —especially with those who have become discouraged. Even after you have treated a hundred cases of dipsomania you will find that to be successful each case will have to pass through the alembic of your synthetic experience.

American Neurological Association.—The American Neurological Association meets at St Louis at the Planters Hotel, instead of in the World's Fair Grounds, as originally planned. The sessions will last from 9 A.M. to 1 P.M. daily. A general invitation to attend is extended to the medical profession.

MEDICAL PROGRESS.

PHYSIOLOGY.

The Alcohol Content of the Organs.—That alcohol in small amounts is found preformed in the animal tissues, is the conclusion drawn from his experiments by G. Laudsberg (*Hoppe-Seyler's Zeitsch.,* May 26, 1904). During autolysis the quantity of alcohol does not increase, but it does increase as the result of bacterial decomposition. The origin of the alcohol in the tissues has not been definitely determined. It is probable that it originates in the gastro-intestinal canal, from the decomposition of carbohydrates by means of yeast cells or bacteria.

The Influence of Castration Upon the Thymus.—That there is some intimate relationship between the sexual organs and the thymus, is shown by the experiments of J. Henderson (*Jour. of Physiol.,* June 30, 1904), who found that castration in cattle causes a persistent growth and a retarded atrophy of the thymus gland. Castration has a similar effect in guinea pigs and rabbits. In bulls and unspayed heifers the normal atrophy of the thymus begins after the period of puberty and is greatly accelerated when the bulls have been used for breeding and when the heifers have been pregnant for several months.

Chemical Regulation of the Secretory Process.—The phenomena of life reveal a series of adaptations to the environment. Only recently have physiologists sought to discover the various adaptations of the parts of the organism to changes in the internal environment, to variations in food, and to the manifold changes in the external environment that include climate, altitude, and the host of bacterial infections. The study of the adaptive capacity of the organism has been applied to the secretory mechanism by W. M. Bayliss and E. H. Starling, whose results are described in the Croonian Lecture (*Proc. Royal Soc.,* May 28, 1904). There are two main types that distinguish the complex reactions that make up the life of the individual. The first type of adaptation is dependent on the adaptive growth of cells, and includes those reactions that depend for their production on some special structural arrangement, *e.g.,* the formation of protective tissues and the development of the central nervous system. The second type, which is the more primitive, involves not so much a change in the growth or arrangement of cells as a change in the metabolism of preformed cells or structures. This is chemical adaptation and comprises two groups: (1) Chemical adaptation to the environment, *e.g.,* the mould *penicillium crustaceum,* when grown on calcium lactate, forms invertase only; on starch, however, it produces amylase in addition, while on milk it produces a proteolytic ferment and rennet. The phenomena of acquired immunity belong to this group, and likewise the process of assimilation of food and the adaptation of the animal to changes in diet; (2) the mechanism of internal correlation, effected partly by means of the nervous system and partly by the blood; *e.g.,* the influence of the thyroid gland upon the nutrition of the entire body; and the vasomotor influence of the internal secretion of the suprarenal bodies. The researches of the authors relate to the adaptation of the organism to changes in food and the chemical correlation of the digestive and assimilatory organs. In the mouth is the nervous reactive mechanism controlling the secretion of saliva. The activity of the salivary glands is excited reflexly according to the nature of the substance present in the mouth. The same is true of the reflex secretion of the gastric juice. The secretion of the pancreatic juice is determined by a nervous reflex, initiated by the stimulation of the intestinal mucous membrane by the chyme. Not only is the pancreatic juice poured into the intestine exactly at the time that it is required, but also the composition of the juice varies according to the food, the proteolytic enzyme being increased by a diet of meat while the amylolytic ferment is increased by a diet of starch. This form of adaptation was ascribed by its discoverer, Pawlow, to a species of "taste" in the mucous membrane, in which different nerve endings are stimulated by different kinds of food. Later researches have shown that these pancreatic adaptations may occur even when all the nervous paths from the intestine are cut, as shown by Popielski and Wertheimer, who found that under the above conditions the introduction of acid into the intestine produced a flow of pancreatic juice. The authors confirmed this result. This showed that one is here concerned with a chemical rather than a nervous mechanism. The introduction of acid into the blood did not produce the effects, which were evidently due to some change produced in the acid in its passage to the blood-vessels through the epithelial cells, or to the production in these cells of some substance, which when carried to the pancreas evokes a secretion. This was found to be the case, for rubbing up the mucous membrane with acid and injecting the mixture into the blood stream produced a copious secretion of pancreatic juice. The active substance thus produced in the mucous membrane is "secretin," whose precursor "prosecretin" cannot be extracted by any means. The most active extracts of secretin are obtained from the duodenum. Secretin can be split off from its precursor by the action of acids or boiling water. The power of the acids in this respect is proportional to their ionic concentration. The authors conclude that the process is one of hydrolysis. The fact that secretin will stand boiling shows that it is neither a coagulable proteid nor a ferment. It is not precipitated by tannic acid, thus excluding bodies of alkaloid nature as well as di-amido compounds. This evidence points to secretion as being a body of relatively small molecular weight and not a colloid. It may be compared to adrenalin. The bodies of higher molecular weight, such as the toxins, which owe their activity, according to Ehrlich, to the fact that they can be directly assimilated by the cells of the body, and built up into the protoplasmic molecule, always give rise to the production of anti-bodies, a process which, while not preventing necessarily their utilization in the body, would prevent their acting as a physiological stimulus to certain definite cells. Adrenalin and secretin, on the other hand, belong to the substances which act by their physico-chemical properties, and whose physiological effect is determined by the total configuration of their molecule. That the pancreatic juice is not an anti-body to secretin is shown by the fact that both substances can be mixed without impairing the efficiency of the pancreatic juice. Secretin is easily oxidized by the body and is got rid of in this way. It also resembles adrenalin in not being specific for the individual or species. The evolution of this mechanism is therefore to be sought at some time anterior to the development of the vertebrates. Secretin increases likewise the secretion of bile. It has moreover no specific influence on any one constituent of the pancreatic juice. Secretin causes the pancreatic cells to turn out the whole of their granules, which they have accumulated during the resting stage. But secretin also excites a building up of the protoplasm and a new formation of granules. It has been shown by Dall that after the discharge of the granules the cells undergo a further involution, and become transformed into cells undistinguishable from those known as the islets of Langerhans, and believes that the latter repre-

sent stages in the functional activity of the secreting cells of the gland. The conditions under which secretin is formed, determine a close adaptation of the pancreatic activity to the needs of the animal. The presence of an excessive amount of acid in the duodenum is prevented by the reflex pyloric mechanism. The pancreatic juice as secreted contains only a weak proteolytic ferment. But it contains also trypsinogen. As it enters the gut, it causes a profuse secretion of intestinal juice, which contains a ferment, enterokinase, which acts on the trypsinogen converting ti into the active ferment, trypsin. Another interesting adaptation of the pancreas is that which results in the change of diet. Thus Weinland has shown that while the pancreatic juice of dogs normally does not contain lactase, yet when the animals are fed on milk (containing lastose), the ferment lactase is secreted. This reaction is absolutely specific. Although lactase is normally present in the intestinal mucous membrane, the appearance of this ferment in the pancreas is not due to the increase of its formation in the mucous membrane and escape into the blood. Extracts of the mucous membrane of the intestine of milk-fed dogs, when injected into the blood of biscuit-fed dogs, causes in the latter the production of lactase. What substance it is which is produced in the mucous membrane, and when carried to the pancreas and there excites the formation of lactose, is not known. It is destroyed by boiling. The chemical adaptations above described are more complex than any others yet investigated, and show the intimate correlation in the chemical reactions of different parts of the body.

Chemistry of Anesthesia.—A valuable study of certain physical and chemical properties of solutions of chloroform in water, saline, serum and hemoglobin was made by B. Moore and H. E. Roaf (*Proc. Royal Soc.*, May 28, 1904). The authors set out with the supposition that the anesthetic power of the hundreds of anesthetics is dependent upon some general type of interaction between the anesthetic and the active part of the cell. As the result of their experiments they draw the conclusion that chloroform forms an unstable chemical compound or physical aggregation with the proteids experimented with, and that it is carried in the blood in such a state of combination. Anesthesia is due to the formation of compounds of chloroform and other anesthetics with proteids which compounds limit the chemical activities of the protoplasm. The compounds are unstable, and remain formed only so long as the pressure of the anesthetic in the solution is maintained. Such compounds are formed not only by hemoglobin but also by serum proteid, and hence the position taken by the anesthetic in hemoglobin is not that of respiratory oxygen. This is further shown by the fact that the oxygen-carrying power of hemoglobin is not interfered with in the presence of chloroform. The facts upon which the authors rely as proofs of the formation of the above compounds in aggregates, are as follows: Chloroform has a much higher solubility in serum or hemoglobin solutions than in saline or water. Even in dilute solutions at the same pressure the amount of chloroform dissolved in serum or hemoglobin solution is considerably higher than in saline or water. The curve of pressures and concentrations in the case of water and saline is a straight line, while in the case of serum and hemoglobin solution it is a curve, showing association at the higher pressures. In the case of serum, chloroform causes a marked opalascence, and also a slow precipitation at room temperature, and at body temperature a rapid, though incomplete precipitation. In the case of hemoglobin, one and a half to two per cent. of chloroform causes a change of color and commencing precipitation at room temperature, which becomes almost complete in the uttermost at 40° C., while five per cent. and over causes complete precipitation at 0° C. The relations between chloroform pressure and concentration in solution have been worked out throughout a long range, from below the anesthetizing values (8 to 10 mm.) to nearly saturation in the case of water, saline, and serum. Attention is drawn to the important physical fact that with the same percentage of chloroform in the air breathed, serum or hemoglobin, and therefore the blood will take up much more chloroform than would water or saline under equal conditions. Thus at the anesthetizing pressures, and at 40° C., the coefficient of distribution in the case of water and saline is approximately 7.3; at room temperature (15° C.), these coefficients become 8.8 and 17.3 respectively.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

New Theory of Cancer.—It is not so long ago that a foremost scientist expressed himself doubtful as to whether the secret of the cancer-cell would ever be solved; it is therefore encouraging to encounter a new plausible theory, based upon accurate observation. In brief, G. Kelling (*Münch. med. Woch.*, June 14, 1904) believes with the older authors that the cancer cell is an embryonal cell endowed with all the energy of growth of young tissue; his theory differs, however, in that he does not regard it as a modified normal cell, but as altogether foreign and introduced from without. Thus embryonal cells are often ingested in raw eggs and the larvae of certain fish form a staple article of food. It is even possible that insects may inoculate these cells directly into the blood. Numerous experiments bear out this view, and the author was able to produce malignant neoplasms (malignant adenoma, carcinoma and sarcoma) in every case where comminuted embryonal tissue was injected into the veins of dogs. Still more convincing proof was obtained by the precipitation test. Several pyloric cancers, removed at operation, were communicated and injected into rabbits in increasing doses. The serum of these animals precipitated the extract of the cancer employed, human albumen and chicken albumen, but not albumen from any other source; thus making it exceedingly probable that the cancer cells took their origin from the embryonal tissue of ingested eggs. In support of the heterologous origin is the fact that nobody has ever observed the transition of normal into malignant epithelium even in the most early growths. It is a well-known fact in biology that all cells of one species possess the same number of nuclear chromosomes; cancer cells differ, however, in this respect from the other cells of the body. Furthermore, the cells behave differently toward X and radium rays and possess a different osmotic pressure, and there can hardly be any doubt that they are foreign.

Neutrophile Leucocytes in Infectious Diseases.—In certain febrile disorders, the leucocytes are within normal limits and chiefly polynuclear. According to J. Arneth (*Münch. med. Woch.*, June 21, 1904), it is a great mistake to pronounce such blood normal for the shape and structure of the nuclei possesses pronounced characteristics. In normal blood, the great majority of the nuclei of the neutrophiles possess two or three distinct lobes (isocytosis), but in all infections or intoxications, no matter whether a leucocytosis is present, cells with a single nucleus (myclocytes), an indented nucleus or a nucleus with only one lobe are more numerous (anisocytosis). Since these cells are the younger elements, their presence is probably an expression of increased disintegration of leucocytes.

Action of Roentgen Rays.—Most observers believe that the skin is affected primarily and most strongly by the X-rays if a portion of the body is exposed to

their influence, but G. Baermann and P. Linser (*Münch. med. Woch.*, June 7, 1904), make the startling statement that the blood vessels react before the skin. All lesions of the skin and connective tissue are thus an expression of nutritive disturbance secondary to vascular alteration. The following experiments support this view: If a diseased area of the skin is excised the raw surface may be covered with skin-graft which will rapidly heal in place. If the skin is first exposed to the Roentgen rays before it is transplanted the healing will be just as rapid, while an equal amount of exposure where the skin is not removed, will lead to superficial ulceration. One may even preserve the exposed grafts for two days in normal salt solution and then transplant them successfully on some other individual, showing that there is not the slightest loss of vitality. If a granulating surface is exposed and then covered with normal grafts, these will be cast off a few days later. The cornea of a rabbit will not be influenced by an exposure which causes falling out of the hair in other parts of the body, simply because the cornea contains no blood-vessels. The blood itself does not seem to be affected by the X-rays for even prolonged exposure, both in vivo and in vitro, did not change the microscopical appearance or the hemolytic power. The most important systemic reaction after exposure is a slight increase in temperature and an increased metabolism, manifesting itself in an abundance of nitrogeneous material in the urine.

The Circulatory System in Relation to the Curability of Tumors.—That tumors are more readily subjected to injury from without than normal tissues, because the circulating blood does not enter into close physiological relation with them, is the statement made by H. Ribbert (*Deutsche med. Woch.*, May 26, 1904). For tumors are not, like the regular organs, supplied by normally constructed vessels. The latter are simply tubes, made up in great part of endothelium, and not able to take part in blood pressure changes. Instead of branching like normal vessels, they constitute a network of interlacing canals. The size of these vessels, as regards their total area, is entirely out of proportion to the amount of tumor tissue supplied by them, for a large pedunculated growth may be nourished by a comparatively small vessel. The blood current is also slowed by the numerous sacculations and dilatations found in the course of these vessels. The rapid increase in size of certain tumors may be explained by assuming that the nutrient materials from the blood are entirely taken up by the tumor cells for purposes of growth and reproduction, as there are no other functionating powers to be supplied.

Leishmania-Donovani in the Soudan.—This disease is rare in Africa, unless it is that the cases have not been recognized. One reported by Sheffield Neave (*Brit. Med. Jour.*, May 28, 1904), being the second one discovered in that continent. The case was that of a boy, eight years of age, who had come from a village, 800 miles up the river, to be treated for chronic diarrhea. He recovered from this, but had a daily intermittant rise of temperature. He was extremely emaciated, his spleen reaching to the navel. All the important lymphatic glands were also enlarged. The peripheral blood was negative, but the splenic blood was crowded with Leishman-Donovan bodies. There was an enormous increase in the large mononuclears. Their count averaged 67 per cent. The history of the child was that the spleen had begun to enlarge in infancy. The cerebrospinal fluid was sterile and the urine contained nothing abnormal. The bodies have a somewhat oval form resembling a grain of wheat. They contained besides the nucleus a small rod-like body. This apparently varies in size, its greatest length being somewhere about half the diameter of an average red corpuscle. The bodies may occur singly, or they may appear to be collected in a spherical envelope about the size of a large white corpuscle. In this form or stage the individuals are often of differing sizes, and very often open spaces appear which suggest the thought that some have dropped out. If the slightest amount of water be mixed with the blood, or even if it be received into the citrate solution to prevent coagulation, the body will appear to disintegrate. This would seem to show that the next step in their life's history was not extracorporeal and that they do not escape by the urine.

Symmetrical Exotoses of the Scaphoid.—These symmetrical growths most frequently occur at the juncture of the epiphyses with the diaphyses of the long bones or upon the short bones which have multiple points of ossification. Fere and Deniker (*Revue de Chir.*, April, 1904), present the photographs and radiographs of a most interesting case in which this peculiar formation on the scaphoid was particularly well marked. It was so large as to be very prominent beneath the skin, and its base was about three centimeters in diameter. The only possible explanation of this phenomena is to be found in some anomaly occurring in the evolution of the individual.

The Leishman-Donovan Bodies.—These interesting parasites are often associated with splenomegaly in India and other tropical countries. They have usually been found in the spleen, liver and bone marrow. Sir Patrick Manson and George C. Low (*Brit. Med. Jour.*, May 28, 1904), report having found the bodies in the lymphatic glands of the mesentery in a patient dead from the disease. Sections of the pancreas, kidney and large and small intestines showed nothing. This information is valuable, because it is along these lines that the life history of the organism will have to be worked out.

Chemical Examination of Diseased Kidneys.—It is a peculiar fact, emphasized especially by A. Orgler (*Virchow's Archiv.*, Vol. 176, No. 3) that the chemical examination and microscopical appearance of pathological kidneys does not always correspond. Thus the microscope may give evidences of advanced fatty degeneration, while less fat will be found chemically than in normal organs. The author believes that many of the highly refractive granules that are looked upon as fat are not really fat, but protagon, a proteid, which also reduces osmic acid to some extent. Normally this protagon is contained in the cell in chemical combination with another proteid, which is destroyed by autolysis so that the protagon crystallizes out.

Pathology of the Aortic Valves.—Normally the asortic valves consist of three layers: A ventricular layer consisting chiefly of elastic fibers, a middle layer made up of loose connective tissue and an aortic layer of transverse fibers without elastic elements. Vessels do not occur in any layer. In the simplest pathological lesion, the slight thickening of the attached border, J. G. Mönckeberg (*Virchow's Archiv.*, Vol. 176, No. 3) could only detect a thickening of the fibrous inner layer with fatty degeneration of the intercellular substance and areas of necrosis and calcification. If more advanced, the process still remains restricted to the inner layer, where the necrotic foci become confluent and the deposit of lime is more marked. In far advanced cases with rigid, insufficient valves, the middle and outer layers are also implicated, and the process extends from its starting point, the base, to the free edge, so that the entire valve will become converted into

a rigid, unyielding plate. Where atheromatosis is secondary to a similar process in the beginning of the aorta the lesions are somewhat different, since the sclerosis begins in the outer layer and descends from the free to the attached border.

Pathology of Molluscum Contagiosum.—Many theories have been advanced to explain the contagious nature of that peculiar skin disease known as molluscum contagiosum, and various authors claim to have discovered protozoa within the cells of the tumors. H. Herzog (*Virchow's Archiv.*, Vol. 176, No. 3) finds, however, that these peculiar structures are solely due to hyaline degeneration and by a special stain he could accurately study the evolution of the so-called molluscum bodies from the normal basal epithelium. An interesting discovery which may explain the infectious nature of the disease, is the finding of large numbers of staphylocci in the excretary ducts and the surrounding tissues.

Action of Fluorescent Substances on Bacteria.—Bacteria seem to be more resistant to the action of photodynamic substances than protozoa. A. Jodlbauer and H. V. Tappeiner (*Münch. med. Woch.*, June 21, 1904), find that losin mixed with bacteria and exposed to the light has hardly any influence, erythrosin will kill off the culture in two to four days and rose bengale and methylene blue in one to two days. Certain other dyes are entirely inactive, though strongly poisonous to paramecium. This is explained best by a lack of diffusibility, the dye being unable to enter the protoplasm of the bacteria. Fluorescent substances produced by bacteria themselves are equally as toxic for bacteria as the synthetic dyes.

The Significance of the Zoological Distribution, the Nature of the Mitoses, and the Transmissibility of Cancer.—In a paper read before the Royal Society, E. F. Bashford and J. A. Murray (*Proc. of the Royal Society*, Vol. LXXIII, No. 489), give some interesting results of work done under the auspices of the Cancer Research Fund. As regards zoölogical distribution, it is found that cancer is found among all domesticated animals and many other vertebrates, even among animals living in a state of nature, e.g., wild mouse, codfish, gurnard. The clinical, pathological, anatomical and microscopical characters of these new growths are identical with those found in man in all essential features, although, the animals themselves are remotely related. The marked difference in the various environmental conditions, such as food, climate and mode of life, in the different forms in which malignant growths occur, shows that external conditions play at least a minor rôle in the etiology of cancer, that the cause of this disease is rather to be sought in the living cells. In general, malignant growths are found to occur chiefly in animals that are examined with care, as the horse, dog and cow, and are unrecorded in forms which are difficult to examine or do not reach old age in considerable numbers. The authors were able to confirm the important observations of Farmer, Moore and Walker, namely, that while the growing margin of carcinomata and sarcomata presented mitoses similar to those found in other tissues in repair and inflammation, certain cells in the deeper layers, after a slight increase in size, entered on mitosis with ring chromosomes similar to those found in the heterotype division of sporemother cells of plants and spermatocytes of animals, and like these, with chromosomes in number only half that characteristic of the mitoses of somatic cells. The latter investigators concluded that malignant new-growths are virtually reproductive tissue arising in abnormal situations and possessed of an independence and power of growth like that of the testis in the mammalian body. The authors confirmed the observations of Farmer, Moore and Walker, by studies on tumors from the trout, mouse and dog. They also noted the following important points: A complicated sequence of cell changes has been found to be characteristic of carcinoma and sarcoma alike. This sequence is the same as that which initiates the origin of the sexual generation in plants from the asexual, and is terminal in the history of the sexual cells in animals. All the cells of the malignant new growths do not undergo the reducing division, a certain number differentiate in the direction of the tissue among which they have arisen, and in secondary growths, when present, somatic mitoses occur in the growing margin, which is also a feature of the growth of cancer when transferred to a new host. The transmission of cancer from man to animals, or from one animal to another of different species, has never been successfully performed. But the authors confirmed the observations of Jensen, that it is possible to transplant cancer from one animal to another of the same species. The experiments were performed on mice. The new tumors that develop at the site of inoculation arise from the actual cells introduced. While many of these degenerate, a few remain by normal size, and these gradually increase in number. Transplantation is in fact identical with the process of metastasis as it occurs in the individual providing the tumor. The process is in no sense an infection, the tissues of the new host not participating in the formation of the new parenchyma. In every mouse in which the transplantation succeeds, the new growth may attain a weight equal to that of the animal itself, and over 400 such transplantations have been effected by Jensen in Copenhagen and the Cancer Research Fund in London. A mass of tumor, 16 pounds in weight, has thus actually arisen from the original one, and that without participation of the cells of the various hosts and without manifest change in structure. This power of growth is a phenomenon unparalleled in the mammalia. The authors emphasize the importance of distinguishing between the problem of the genesis of a malignant new growth, and that of the conditions which permit of its continued existence. Among 1,000 tame mice they found two with cancer. The wide zoölogical distribution of malignant new growths indicates that the cause of cancer is to be sought in a disturbance of those phenomena of reproduction and cell-life which are common to the forms in which it occurs. The authors' observations also showed that malignant new growths are always local in origin and of themselves produce no evident constitutional disturbances whatever. The evidence which they have advanced that cancer is an irregular and localized manifestation of a process, otherwise natural to the life-cycle of all organisms, probably explains why it is that malignant new-growths and their extensive secondary products, are devoid of a specific symptomatology.

The Liver in Portal Thrombosis.—According to F. Steinhaus (*Deut. Arch. f. klin. Med.*, Vol. 80, Nos. 3 and 4) thrombosis of the portal vein may occur both with and without distinct disease of the walls of the vein. In the majority of cases no changes take place in the liver, since the circulation of blood is not impeded and the liver receives its full amount of nutrition. If, however, the venous circulation is interfered with, especially the hepatic venous circulation with diminished arterial blood supply, the so-called atrophic red infarcts will result. These foci are sharply circumscribed, rectangular or wedge-shaped and generally dark-red in color. Microscopically, the capillaries are

distended with blood, the liver cells are atrophic and the portal branches thrombosed. If the thrombosis extends into the interlobular branches of the portal vein, necrosis and hemorrhage will follow. The branches of the hepatic artery may be normal or diseased, yet the arterial blood supply is completely shut off here. Acute thrombosis manifests itself clinically in severe abdominal pain and copious hemorrhages from those organs drained by the portal vein. Complete occlusion is generally fatal, partial obstruction will eventually lead to ascites, splenic tumor and periodic hemorrhage. The most common etiology is syphilis, tuberculous peritonitis, compression by tumors, glands and gall-stones.

Chronic Infection and Subinfection by the Colon Bacillus.—By repeated intravenous injections of living cultures of the colon bacillus into rabbits, G. A. Charlton (*Jour. of Med. Research*, May, 1904), caused the development of a state of advanced anemia, not quite comparable with any of the classic forms seen in man. In some respects it resembles pernicious anemia, namely, in the very great diminution of erythrocytes, the marked poikilocytosis, and the appearance of nucleated red corpuscles. On the other hand, it differs from pernicious anemia in the fall of the amount of hemoglobin being parallel with the decrease of the red corpuscles, in the absence of a distinct and extensive Inincke's siderosis, in the absence of any clear evidence of inflammatory or other disturbances of the digestive tract, and of well marked changes in the bone-marrow. In the advanced stage of this anemia a diffuse degeneration of the spinal cord was set up, affecting the posterior and lateral columns of the cord, in the lumbar and dorsal regions. This degeneration consisted in a fatty degeneration of the myelin sheaths of the fibers and certain pigmentary changes, in the nerve-cell bodies of the gray matter. The ventral columns of the cord and the gray matter were not affected. Similar conditions of anemia and spinal cord degeneration could not be produced by injecting killed cultures of the colon bacillus, nor by filtered cultures. When the living cultures were acted upon by pepsin, and injected intravenously, they did not differ materially in their action from the original living cultures.

Lymphatic Glands in Sleeping Sickness.—In examining the contents of the lymphatic glands during life in patients suffering from sleeping sickness, E. D. W. Greig and A. C. H. Gray (*Proc. Royal Soc.*, June 22, 1904) found the presence of actively motile trypanosomes. The latter are far more numerous in the glands than in the blood or cerebro-spinal fluid, and the examination of fluid removed from the glands will prove to be a much more rapid and satisfactory method of diagnosing early cases of the disease. The authors believe that these observations throw a new light upon the glandular enlargements which have been so constantly noticed in sleeping sickness, and that the disease is essentially a polyadenitis brought about by the arrest of the trypanosomes in the glands where many of them are destroyed, but whence some escape from time to time into the blood stream and this occasions the increase which has been observed in the peripheral circulation.

Heat Regulation and Death Temperatures.—In studying the variations of the bodily temperature as death approaches E. M. Corner and J. E. Sawyer (*Proc. Royal Soc.*, May 28, 1904) propose the following theory for the causation of pyrexia. It is due to two factors, to an augmented production of heat owing to the activity of the thermogenetic centers in the spinal cord being no longer perfectly controlled by the higher center in the brain, and to a diminished loss of heat owing to the weakening of the functions of the thermolytic center; the power of the two higher centers being weakened or paralyzed by the morbid products or toxins of the affection from which the organism is suffering. In other words, normal temperature is preserved by a mutual see-saw action of these centers.

Lipase in the Urine in Experimental Pancreatic Disease.—It is possible to show the presence of lipase in the urine and to roughly estimate the amount, according to A. W. Hewlett (*Jour. of Med. Research*, May, 1904). Very little, if any, lipase is present in normal urine. Lipase appears in the urine after a variety of insults to the pancreas of dogs. It was found in great amount as a result of experimental acute hemorrhagic pancreatitis. It was also found over a period of from three to five days after obstruction of the pancreatic duct. It is probable that severe pancreatic trauma may cause the appearance of lipase in the urine. The above are the conditions in which fat necroses are most apt to occur in human pancreatic disease.

The Action of Radium on Micro-Organisms.—A specimen of pure radium bromide was used in a series of experiments by A. B. Green. (*Proc. Royal Soc.*, May 28, 1903) in an effort to determine the germicidal powers of the emanations, and whether the radio-activity may be imparted to bacteria. In using calf vaccine with its contained extraneous bacteria, the *S. pyogenes aureus, S. pyogenes albus, S. cereus flavus, S. cereus albus*, the author found that the specific germ in no case survived a longer exposure to radium than 22 hours, at the end of which time it had completely lost its ability to cause vesiculation or any visible irritation at the site of inoculation on a calf. The extraneous bacteria did not survive after 15 hours. The following species of micro-organisms were separately tested: the extraneous germs above mentioned, and *S. pyogenes, B. prodigiosus, B. proteus vulgaris, B. pyocyaneus, B. typhosus, B. coli communis, B. Mallei, B. pestis, B. tuberculosis*, the B. of Malta fever, *Spirillum cholerae Asiaticae*, and the sporing cultures of *B. mesentericus vulgatus, B. mesentericus ruber, B. subtilis, B. anthracis, B. tetani*, Gärtner's B., the bacillus of malignant edema, and the bacillus of Rauschbrand. All the non-sporebearing bacteria mentioned were killed after exposure to radium for 2-14 hours. The bacteria containing spores were by far the most resistant to the germicidal action of radium, for they were not killed by less than 72 hours' exposure. It has been found that after exposure at a distance of one min. to the radium emanations for 24 to 120 hours, micro-organisms may themselves show signs of radio-activity. It has not yet been determined whether living micro-organisms can exhibit induced radio-activity. No radio-activity has been found in bacteria not exposed to the action of radium.

The Rôle of the Blood Fluids in Connection with Phagocytosis.—A continuation of their interesting researches along this line has been made by A. E. Wright and S. R. Douglas (*Proc. Royal Soc.*, March 7, 1904). In their previous experiments the authors found that the phagocytosis which occurs when cultures of *S. pyogenes* are added to the human blood is directly dependent upon the presence of certain substances in the blood which exert a specific effect upon the bacteria. The bacteriotropic substances thus revealed were denoted by the term "apsonius." The authors now find that the apsonic power is exerted not exclusively upon the *Staphylococcus pyogenes*, but also upon the *B. pestis*, the *Micrococcus melitensis*, the *Diplococcus pneumoniae* of Fraenkel, the *B. coli*, the *B. dysenteriae* (Shiga), the *B. anthracis*, the *B. typhosus* and the *Vibrio cholerae*

Asiaticæ. As far as the authors have gone, the *B. xerosis* have proved to be the only pathogenetic bacteria which are insensible to this action of the blood fluids. The bacteria are accordingly classified as follows: (1) Bacteria which are eminently sensible to the bactericidal, bacteriolytic, and apsonic action of the normal human blood fluids.—The *B. typhosus* and the *Vibrio choleræ Asiaticæ*. (2) Bacteria which are in some measure sensible to the bactericidal action of the normal human blood fluids, but are eminently sensible to its apsonic action.—The *B. coli* and the *B. dysenteriæ*. (3) Bacteria which are absolutely insensible to the bactericidal action of the normal human blood fluids, but are eminently sensible to the apsonic action of these fluids. The *Staphylococcus pyogenes*, the *B. pestis*, the *Micrococcus melitensis*, the *Diplococcus pneumoniæ*. (4) Bacteria which are insensible both to the bactericidal and to the apsonic action of human blood fluids.—The *B. diphtheriæ* and the *B. xerosis*. It has been shown that patients who are the subjects of acne, sycosis, or boils are characterized by defective phagocytic power for the *Staphylococcus pyogenes*. The latter is dependent upon a defect of apsonic power. The authors demonstrated that successful immunization against *Staphylococcus pyogenes* is dependent upon the elaboration of apsonius in the system of the inoculated patient, and suggest that successful immunization against plague and Malta fever and against streptococcal invasions may be likewise dependent upon the elaboration of apsonius.

The Influence of Alcohol, Ether, and Chloroform on Natural Immunity.—That alcohol, ether, and chloroform have a decidedly detrimental influence in the natural defenses against infection has been proved experimentally by G. RUBIN (*Jour. of Infectious Diseases*, May 30, 1904), who also found that this lowering or suspension of the resisting power of the animal is not due to any apparent organic lesions. The narcotics appear to affect directly the substance or substances which inhibit the growth and toxic action of bacteria in the normal animal and these substances are either the leucocytes themselves or something derived from them, or both. Snee has shown in his work that alcohol and ether suspend also conferred immunity against a specific microbe. The period of detrimental action of the narcotic depends largely on the amount administered, the depth of narcosis, and the rapidity of its elimination from the system. Some of the narcotized animals that were employed in other experiments with infectious material 24 hours after narcotization fared as well as the new rabbits.

OBSTETRICS AND GYNECOLOGY.

Eclampsia.—An excellent review of our present knowledge of this subject is presented by P. ZWEIFEL (*Archiv. f. Gyn.*, Vol. 72), in which particular attention is paid to the quantitative chemical analyses of the urine and blood. The former have been directed to the estimation in the urine of the albumin, and nitrogenous or non-nitrogenous disintegration products of albumin, and the latter to the quantitative analysis of the blood as regards uric acid and the salts of ammonia. At the beginning of an eclampsia, the urine contains a diminished amount of uric acid, which is the end product of albumin metabolism, and which increases again as recovery is brought about. There is no increase to be found, however, of the amount of uric acid in the blood, nor is there any increase of the NH_3. The conclusion to be drawn from these facts is that there is a marked interference in the process of oxydation of the albumin. The author is inclined to the belief that lactic acid or neutral sulphur is the toxic product which induces the convulsions. In the section on treatment, Zweifel advises as a prophylactic measure, the administration of tartrates in the food, which should comprise plenty of fruit and vegetables and little meat or eggs. Farinaceous foods and sugar may be taken in moderation, as they are not concerned in this disturbed metabolism. When the attacks have already come on he advises the administration of tartrate of potash or soda, if necessary through the stomach tube, and also the subcutaneous transfusion of a solution containing bicarbonate of soda (0.5 per cent.) and sodium chloride (0.5 per cent.) in distilled water. Narcosis by chloroform or other drugs is not recommended, and diaphoresis has not been followed in his experience, by sufficiently favorable results to warrant its employment. Immediate delivery is considered by Zweifel to be the most effective measure for saving the life of the patient, and he recommends forcible dilatation of the cervix when necessary, by means of bags in preference to instruments of the Bossi type. If this is ineffectual, he makes deep incisions into the cervix, essentially a vaginal Cæsarian section. The first indication in all cases, however, when they first come to the attention of the physician during the attack, is to immediately rupture the members.

Laryngeal Tuberculosis and Pregnancy.—The association between these two conditions has been considered intimate enough to warrant the induction of labor where tuberculosis of the larynx was present. R. SOKOLOWSKY (*Berl. klin. Woch.*, 1904, No. 27) reports two cases where even this radical precedure failed in its effects and the disease progressed until the patients died within a few weeks after delivery. In one woman labor was induced during the eighth month, in the other during the sixth. In connection with two similar cases lately reported from another source, the author believes that the interruption of pregnancy is of no value unless done during the early months and woman afflicted with tuberculous laryngitis should be warned of their danger and a facultative sterility advised, in order that they may not become exposed to these grave possibilities.

Prognosis and Treatment of Puerperal Pyemia.—As the results of his extensive experiences, E. OPITZ (*Deut. klin. Woch.*, 1904, No. 27) believes that only in exceptional instances should operative treatment be directed toward ligation or removal of the diseased veins, as recommended by Trendelenburg, or toward total extirpation of the uterus as suggested by Schultze. The indications and the recognition of the side on which the process is localized, are entirely too difficult and uncertain. The objects of treatment should be to strengthen the system in its fight against the infection and to avoid further damage. The author's recommendations are, proper nourishment (albuminoids, sugar, milk, little alcohol); an abundance of fluid by os, rectum and infusions; absolute rest; sedatives, such as pyramidon, phenacetin, salipyrin, sometimes camphor or digitalis. Diarrhea he does not combat. No favorable results followed the injection of turpentine oil or silver salts. In the future he believes that good results may be looked for with treatment by nuclein, antipyrin and collargol (intravenously). Good and efficient nursing is of the greatest importance.

Borax in the Treatment of Epilepsy.—This much lauded remedy has been given a practical trial by J. HOPPE (*Berl. klin. Woch.*, 1904, No. 27) in a series of 12 cases. In seven of these the drug was followed by no favorable effect whatever, and in some few instances the patients grew worse. The latter presented some functional derangements of the excretory organs.

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"THE WAY WE HAVE IN THE ARMY."

THE qualifications necessary for admission into the Medical Corps of the United States Army have been again increased and the standard raised. These amended regulations took effect on July 1, 1904, and will, without doubt, not only increase the efficacy of the Service, but improve it materially in other ways. The immediate appointment of applicants for commissions, after successful physical and professional examinations, the latter embracing all subjects of medical education, has been discontinued. Hereafter all candidates will be subjected to a preliminary examination, and then, if successful, to a final or qualifying one, with a course of instruction at the Army Medical School at Washington intervening.

The preliminary examination now consists of a rigid inquiry into the physical qualifications of those seeking commissions. This, if successfully passed, is followed by a written examination in the following subjects: Mathematics (arithmetic, algebra, plane geometry), geography, history (especially of the United States), Latin grammar and the reading of easy Latin prose; English grammar, orthography and composition, anatomy, physiology, therapeutics and normal histology. The subjects in general education, the circular states, are "an essential part of the examination and cannot under any circumstances be waived."

These preliminary examinations are conducted concurrently throughout the United States by bands of medical officers at convenient points. The questions submitted to all aspirants will be the same, thus insuring a thoroughly competitive and fair test, and all papers will be graded and criticized at the War Department, in Washington. Applicants who attain a general average of 80 per cent. will be employed as contract surgeons and ordered to the Army Medical School for instruction as candidates to the Medical Corps of the Army. If, however, the number of those successfully attaining the required average is in excess of the accommodations at the school, the requisite number will be selected according to their relative standing in the examination.

The course of instruction at the Army Medical School will, the authorities state, consist of lectures and practical work in subjects peculiarly appropriate to the duties which a medical officer is called upon to perform. While at this school the students will be held under military discipline and character and general deportment closely observed. All this is a step in the right direction, and nothing more seems possible unless indeed to require that all candidates must be college graduates, which will undoubtedly be eventually the case. Meanwhile the changes will unquestionably raise the status of the medical corps and strengthen the conjunction between "an officer and a gentleman" and render the terms synonymous. But we do not believe that this legislative action will play the part of the Guatamalian ants to the boll weevils, or that it will kill the microbe that lies at the roots of the trouble between the line and the staff, viz., the craving on the part of the latter for military titles and distinctions to which it has no moral right, either by tradition or association. For, while there is nothing in the training of the curriculum at West Point to prevent a graduate from becoming an excellent commissary officer, or a first-class paymaster, yet there is also nothing that could render him capable of assuming the duties of a surgeon, and the professions are as absolutely distinct in the Service as they are in civil life.

Now, the profession of medicine is an honorable estate. It certainly takes as many years of hard study, the possession of as much, if not more, intellect to become a good doctor as it does to become a good soldier, and the one profession

undoubtedly stands as high in the estimation of the community as the other. Why, then, should the representatives of the one desire to assume the appellations and designations of the other? That they do so desire is unquestionably the rule, and it is unfortunately one of those proverbially poor rules that does not work both ways. For, while the army surgeon, particularly of late years, is most insistent of his rank and most tenacious of any military designation that it may represent, such as captain and major, the case is yet to be reported where even a second lieutenant sought to infer that he belonged to the medical staff of the Army.

And this is the humiliating part of it to the general medical profession at large. That these men who have the brains and the assiduity to pass these examinations should by their claim to titles that belong exclusively by habit and tradition to another branch of the Service with which they have no connection, and tacitly admit that even if they are not absolutely ashamed of their profession, yet they *do* consider it inferior to that of their purely military associates. Surely peace has its victories as well as war, and in the future if young men are emulous of the laurel wreaths of the firing line and discontented with the bay leaves of the hospital tent, they had better enter the Academy at West Point in the beginning. Then they will become real "sure enough" generals and colonels and not majors and captains in the Medical Corps.

Some few years since there was a doctor who had been put on the retired list of the Army. He was an old surgeon and a good one, too; so good that besides his retired pay he had been rewarded by a grateful government with high honors and "a ribbon to pin on his breast" as a pledge to assure him thereof. Soon after that a modest sign appeared at his door bearing his name with the conventional M.D. of the ordinary physician's plate. Then he settled in a quiet little Canadian watering place for the summers and became a part of it.

Meeting by chance a physician who enjoys one of the largest practices in one of our Western cities, at the hotel, he entered into conversation with him and chatted some little time on medical topics. The next morning the physician happened to be on the front steps as the surgeon passed the hotel. Down the walk he came, head erect, shoulders squared and chest protruding, his neck confined in a starched stock and his feet firmly planted in cadence with the illusive strains of an imaginary brass band. As he swept by he brought his cane to a marching salute, which was at once returned by the cheery "Good morning, Doctor," of the unconscious physician. The column of one instantly halted, faced to the right and in the first position of the soldier, with his little finger held lovingly in the rear of the seam of the pantaloons, he thundered out, "*Not* Doctor, Sir; Colonel, Colonel, Colonel!"

The physician was thunderstruck, but he grasped the situation. He instantly apologized on the grounds of the likeness of the speaker to a doctor with whom he had conversed on the previous evening and alluded to the sign which he said "was indicative of seeking medical practice and which did not have any of the earmarks of a d—d recruiting officer." The surgeon admitted that the sign was his, and then the physician, with all the incisiveness born of Boston, which was enhanced rather than tempered by the acquired breeziness of the West, proceeded to inform him what he and the profession at large thought of "a Judas that put his hand into the dish of medical patronage and then denied his Master."

Could anything be more ridiculous, unless it is the fact that when a foreign, world-celebrated physician called on a man who had once been Chief of the Bureau of Medicine and Surgery in the Navy Department—his butler reprovingly said when asked "if the Doctor was at home," "No, sah, the Admiral is not receiving to-day." Luckily these things right themselves when they have been sufficiently laughed at and ridiculed, but the army surgeon should be content with his own profession, which he has long led, as compared with the armies of other countries, and not seek a military position, which at the best would only cause him to be classed with that charmingly alluring, but distinctly hybrid individual, one "Captain Jinks, of the Horse Marines."

"BUTTON BUTTON."

Robert F. Weir, speaking recently on the disadvantages of the Murphy button, said: "This remarkable ingenious contrivance has furthered the development of abdominal surgery more than any of the many hundred kindred devices which have been suggested. Without the courage which its facile employment and its generous assurance of success has given to surgeons, it would have taken many more years than have passed since its introduction to have accomplished what already has been done."

If this be true of the Murphy button, and the authority quoted stands among the highest in the world,—it must also, in a less degree, be true of the many minor and, in general, imitative instruments to which Dr. Weir referred. On the principle, however, that dogs have their day; irrespective entirely of the fact that fashion in surgery is quite as imperative as it is on the back of the fair sex (and entirely in accordance and in agreement with Dr. Weir's laudation of the Murphy button, has not the time come to inquire seriously into the question of its present position in the surgeon's arnamentarium?

That there is no fair answer to this save an affirmative one, is vouchsafed in part by the broad minded attitude of the distinguished inventor of this button,—Dr. John B. Murphy. At the recent meeting of the American Medical Association in Atlantic City, in reply to Dr. Weir's criticisms of the button, Dr. Murphy said that more had been expected of the invention, more burdens had been cast upon it than he himself had ever intended or desired. He very freely admitted that it was open to strenuous objection. He did not deny that occasionally after performing gastro-enterostomy, the button fell into the stomach, and he delighted the audience, and Dr. Weir as well, by saying that the only time this accident had befallen him, had been when he had made use of the well-known Weir modification of his button by which a flange was so fitted as supposedly to prevent this catastrophe.

Within the past ten years the definite decision has taken firm root that it is unsurgical in the truest sense of the word to introduce non-absorbable materials into the tissues. It may be said with truth that Murphy's button does not technically fall within the pale of this decision, and although academically perhaps, from the standpoint that the inside of the gut is upon the outside of the stomach, nevertheless, from a practical viewpoint and clinically, when a man gets a button in his belly, or has one lodged for good in his intestine, the button is inside of him so far as his comfort goes.

It is perhaps easier to forecast the future of such a contrivance as the button by watching the history of other non-absorbable devices. Eight years ago, a great many of the so-called Phelps' woven wire mattrass pads were introduced into the abdominal wall to repair its lack, in certain cases after the reduction of large herniæ. Although many of these pads froze, as it were, into place, through the kind agency of asepsis, they never, without exception, save perhaps the one which proves the rule, proved to be either remedial of the lesion or comfortable to the patient. By the usual process of nature, who has at length forced upon us the fact that she abhors foreign bodies as well as vacua, they were one and all forced to the surface and were driven out through a sore and sinned against skin. Does any one now employ these pads? Is not the use of silver wire as a bone-suturing material, even, going utterly and entirely out of use? The conclusion is now self-evident that the patient might just as well be expected to wear permanently the external splints used to coapt a bone, as to endure the existence of permanent internal splints in the shape of silver wire.

The prognosis then for the life of the Murphy button, based upon an examination of the fate of other non-absorbables, is distinctly bad.

What prognosis is furnished by that most sensitive of all indicators, the Zeitgeist? Everywhere far and near, there is an indication that surgeons are seeking after something better than the button. It might be said that that was simply an indication of an effort at progress, but the extent, and persistent earnestness and variety of the search, indicate something more than that. Many of these attempted improvements on the button are too well known to deserve citation, but there is one which was presented before the recent meeting of the American Surgical Association at St. Louis, which deserves more than passing interest. This is not because of the probability that it will definitely supersede the button, even in part, but because its very ingeniousness shows the need for some suitable contrivance or method.

Dr. F. B. Harrington, of Boston, has devised an aluminum bobbin, which is constructed out of four separate segments of a circle. Little shoulders abut and when held tightly in position by a catgut strand, the ring is completely rigid. A convenient handle coupled to the ring serves to hold it during the period of its insertion. This ring has given, in the hands of its distinguished inventor, admirable results. It breaks up into four segments weighing but a few grams, each one of which has four rather sharp corners. They have been observed under the X-ray to be carried by the motor power of the stomach from the artificial opening to and through the pylorus.

Are sixteen points of possible danger preferable to the well tried but by no means infallible Murphy button?

Before this question can be answered from the

experience of many hundreds of operators as the delicacy and ingeniousness of the contrivance justifies that it should be, it is to be hoped that a more felicitous means of accomplishing what these non-absorbable means do so well, will have been devised by an equally certain but more innocous absorbable material.

ECHOES AND NEWS.

NEW YORK.

Appointment of Dr. Norris.—At the meeting of the Board of Trustees, held on Wednesday, July 27, 1904, Dr. Charles Norris, of New York, was appointed Director of the Pathological Laboratories in the Department of Bellevue and Allied Hospitals, said appointment to date from October 1, 1904. Dr. Norris has been an active worker in pathology for a number of years. For the past two years he has been teaching in the Pathological Department of Columbia University. Bellevue and this city are fortunate in having obtained the services of so able a pathologist.

Appointment of Dr. Prentiss.—Dr. Henry Prentiss, instructor in practical anatomy in the Bellevue Medical College of this city, has been appointed Professor of Anatomy in the University of Iowa.

Rockefeller Institute Plans.—Plans have been filed for the new laboratory building to be erected on Exterior Street, east of Avenue A, for the Rockefeller Institute of Medical Research, of which Dr. William H. Welch, of Johns Hopkins University, is president, and Dr. S. Flexner, Resident Director. It is to be a five-story edifice, 136x60, with a façade of limestone and brick. It will be decorated with pilasters of brick, and have a porch entrance flanked with decorative columns for the support of electric lights. The first floor will be an assembly hall, with a library and study and directors' room. The upper floors will contain large general and special laboratories and research rooms. The fifth will have a dining hall and living quarters, and the roof a special operating room and quarters for the animals under examination. Adjoining the main building will be a two-story building for the animals used by the doctors, and powerhouse. The cost of the buildings is estimated at $325,000.

The National Association of Tuberculosis.—The National Association for the Study and Prevention of Tuberculosis, which was organized at Atlantic City on June 6, is to begin active work on Monday next. An office has been secured in the Associated Charities Building at Twenty-second Street and Fourth Avenue, and Mrs. Florence F. Colby has been elected assistant secretary to start the work. An executive secretary will be elected in September. The association promotors are starting out with the idea that at least $50,000 can be raised yearly to carry on its crusade, which is to be mainly one of education. There is no idea of founding any sanitarium, hospital or dispensary for the treatment of the disease. It is not likely that a laboratory even will be instituted at first, although that may be done later. The work planned for the first year at least is the collection and dissemination of information of every sort touching the disease. Statistics will be collected and pressed on the attention of municipal bodies and institutions in order to get them to make scientific warfare against the spread of the infection. The primary purpose is to make the association headquarters a clearing house for tuberculosis lore. The formation of local associations and committees will also be urged and assisted in every possible way. It is probable that a special journal devoted to tuberculosis will be published; but this point is not quite decided. One of the first definite enterprises will be the publication of a Tuberculosis Directory. This will be done in cooperation with the Charity Organization Society, whose tuberculosis statistician, Miss Lillian Brandt, has already in hand a great deal of the necessary information, including particulars of 125 hospitals and sanitaria in this country and Canada specially equipped for the treatment of tuberculosis. The crusade promises to be an active one, and all physicians in the country can greatly aid the National Society in its propaganda.

Reduction in Infant Mortality.—Thanks to the efforts of the summer corps of doctors and nurses, aided by more favorable weather, infant mortality decreased last week. From a total of 565 deaths the week before from diarrheal diseases, of which 523 were children under two years, the death list from the same causes in the week ended Saturday, July 30, dropped to 426, of which 388 were children under two years. With this decrease the death rate from all causes came down from 23.46 to 20.65, the lowest is seven weeks. When the deaths among the children became so appalling in number warnings were sent out and sanitary laws enforced with renewed vigilance by the city Health Department. The summer corps searched out mothers of babies, ill or well, in the tenements and preached the gospel of boiled water, pure milk, proper clothing, fresh air and all the precautions that make for health. The summer corps visited 5,130 houses, sheltering 26,963 families, last week, and treated 362 ill children. The corps distributed 8,636 circulars, giving directions to mothers of young babies, and gave out 580 milk tickets and examined 2,852 children for the St. John's Guild boats. Not a quarter of the guild tickets were used, however. The mothers retain their fear of excursion boats caused by the fate of the Slocum excursionists early in the summer, and even the enticing prospect of a free ride and the recommendation and assurance of the doctor are not sufficient to induce them to risk themselves and their children aboard. As showing that the tenement conditions are largely responsible for the high mortality of children the deaths from diarrheal diseases are confined almost wholly to Manhattan and Brooklyn, and to that part of each borough where the congestion is greatest and especially where the foreign element is most conspicuous.

PHILADELPHIA.

Beriberi in Port.—When the sugar-laden bark Foohng Suey arrived at the State quarantine station at Marcus Hook the past week it was found that eight cases of beriberi were on board. One sailor had died of the disease at sea. After the sick men were removed, the vessel was fumigated for twenty-four hours and then allowed to come to the city. Some criticism has been made regarding the action of the government physicians at Reedy Island, who passed the ship without subjecting it to fumigation.

Heads of Quarantined Houses Warned.—A circular issued by the Bureau of Health directs the heads of quarantined houses to see that all bottles or other vessels that have contained milk be disinfected by or under the supervision of the bureau before they are removed from the place. Milk dealers are also notified not to collect such bottles until properly prepared. This is to prevent the spread of contagious diseases from house to house.

State Examinations Unsatisfactory.—The President of the State Board of Medical Examiners is quoted

as saying that the results of the recent examination of 376 applicants for State license are highly unsatisfactory. Detailed report will not be made until after the meeting of the board on August 8, at which time some action may be taken to better existing conditions. The suggestion that the charters of certain medical institutions be revoked is not among the impossibilities.

New Pure Food Law Being Prepared.—Legislative acts being prepared for introduction will give the Department of Health of Philadelphia specific power to stop the sale of adulterated and preserved foods. At present this is impossible, and many dealers escape. State Commissioner Warren is in favor of imprisonment for men convicted a second time of adulterating foods, the first offense having been punished by a fine.

Smallpox and Vaccination.—Director Martin has issued a statement in which he declares that smallpox no longer exists in this city. Among other things, he says: "After a three years' struggle, the results of which have been extremely slow in appearing, the smallpox epidemic, which has cost Philadelphia thousands of lives and millions of dollars, has reached an end. It should never have occurred and could have been avoided with absolute certainty had the community, as a whole, been properly protected by vaccination. The responsibility of preventing a recurrent epidemic rests with the Health Department and the medical profession of Philadelphia." After asking for the vaccination of all persons not properly protected he states: "We consider as evidence of proper protection against smallpox in persons under twelve years of age the presence of at least one typical vaccination scar. In persons more than twelve years of age, the presence of at least two typical scars, made at different times, or the evidence of successful vaccination practised within five years."

CHICAGO.

Allegations of Cruelty Baseless.—After examining fifty employees of the Northern Hospital for the Insane, the State Board of Charities, represented by a majority of its members, voted that the charges of abuse and cruelty preferred by the Elgin Trades Council in its letter to Governor Yates were utterly baseless. The board is charged, however, with not giving the members of the Trades Council, who have made affidavit to special cases of cruelty, proper opportunity to appear. The board has what purported to be the original charges, and made an investigation among the employees of the asylum to discover if any attendant, nurse, physician, or other official, had committed any of the brutal deeds set forth in the accusing document, and each of the witnesses asserted there could be no possible premises upon which to build tales of inhumanity.

Work of Nurse Association.—The report of the Visiting Nurse Association for the month of July shows that 798 patients were attended and 3,679 visits made. The principal cases treated were consumption, typhoid fever, and children's diseases. The work of the Association is greatly hampered by lack of funds, more nurses being needed at once.

New Building for Cripples.—Mrs. R. H. McElwee, of Lake Forest (Illinois), has, in charity's cause, donated a new building to the Home for Destitute Crippled Children. The gift will be in the form of an extension to the present structure, and will cost from $30,000 to $40,000. The work of construction will soon begin. The institution as it stands affords accommodation for 35 or 40 crippled little ones, but even with that limited number its wards are overcrowded. The new wing will house 80 more and will be devoted largely to orthopedic cases.

The Murder Habit.—Statistics of murders which have just been compiled in Italy show that while in France the annual rate is one murder to every 100,000 inhabitants, in Northern Italy it is 4, in the middle provinces 24, and in the southern provinces, including Naples and Sicily, it is 30. Last year the Cook County (Illinois) Coroner held inquests in 118 cases of homicide, of which only 11 were reported by him as justifiable. This is at the rate of about 6 per every 100,000 of the population. Chicago can hardly take pride in the fact that her murder record is five times better than that of Naples and Sicily. On the contrary, she can feel nothing but shame that it is six times worse than that of France. Probably the local record for the current year will be better than that of last year, for the numerous instances of severe penalties inflicted by juries during the first six months of the year cannot fail to have their effect. Nevertheless, the need of improvement will still be marked, and improvement can come only as the community places a higher value on human life and insists that all public officials take the most vigorous methods to bring all murderers to justice.

Changes in Faculty.—Professors Orville E. Brown, Elias P. Lyon, and Chas. H. Neilson, of the Department of Physiology of the University of Chicago, have resigned to accept similar positions on the faculty of the University of St. Louis.

Will of Dr. N. S. Davis.—The will of the late Dr. N. S. Davis, father of the American Medical Association, disposes of an estate valued at $39,000, of which $25,000 is real estate. The homestead is bequeathed to his widow, his library to his son, and a perpetual scholarship in Northwestern University to his grandson, Frank H. Davis.

Opening of Tuberculosis Hospital.—The new hospital for the treatment of consumptives at Dunning was turned over to the officials recently, and a little later all the patients in the old building were transferred. The new hospital consists of five cottages, and will accommodate 160 patients. The old building is to be used as a hospital for the sick insane.

GENERAL.

Fate of the Substitutor in New Orleans.—Recent developments in New Orleans show that the owners of a certain company operating under the name of the German Chemical Company have been arrested and arraigned under charges of obtaining money under false pretenses by attempting to sell modern chemicals as pure when they were found to be gross adulterations. Phenacetin was found to be 65 per cent. acetaniled and 35 per cent. phenacetin, and other products treated in like manner. We might hope for more strict regulations in other parts of the country if the physician is to have any assurance of the real quality of his wares.

Koch's Successor.—Professor Gaffky, who was appointed the successor of Koch as director of the Institute for Infectious Diseases in Berlin at Professor Koch's desire, was associated with his predecessor in 1883-84 in the cholera expedition sent by the German Government to Egypt and India, and helped him prepare the report thereon. In 1888 he became professor of hygiene at the University of Giessen, and during the Hamburg cholera epidemic, four years later, he was engaged by that city as expert adviser. In 1897 he was at the head of the dangerous expedition sent to India by the Government to study the plague. Gaffky was born at Hanover, in 1850, and began his career as military surgeon in the Prussian army.

Liability for Medical Attention—"Dowieism."—The Supreme Court of Indiana recently affirmed the de-

cision on the "Christian Science case" in which the Clinton County court discharged Joseph Chenoweth from a prosecution for involuntary manslaughter, in allowing his baby to die of acute pneumonia without calling a physician. The baby was nine months old, and had whooping-cough. The disease finally became acute and Chenoweth called in an elder, who "annointed the child with oil and prayed for the healing thereof." He also communicated with one Dowie, at Chicago, and caused him to pray for the child. His neighbors urged that a physician be called in, but he refused to have a physician or to give the baby medicine, because he believed in "Divine healing," and offered and cited the "Word of God" as his justification for the refusal. Chenoweth was able to hire a physician had he desired one. The physicians who were called as witnesses against Chenoweth testified that so young a baby would probably have died if a physician had been called after bronchial pneumonia developed, but that its life could probably have been prolonged. The trial judge held that there was no testimony that the father's neglect caused or even materially hastened death. The Supreme Court really decides nothing except that the appeal was not so presented that it could decide the important public question which the State sought to have reviewed, and thereby determine and settle in this State the law applicable to cases like the one at bar. But Judge Jordan, speaking for the court, quotes with approval from cases in New York, Canada and England, in which parents have been convicted of manslaughter for neglecting sick babies, where the courts held that religious belief was no excuse for not providing medical care and attention. The decision by the highest court of British Columbia, where the father, a "Zionite," refused to call a physician for his children when he knew they had diphtheria, is stated to the effect that the person who fails to provide necessary medical attention and remedies is criminally responsible and that a conscientious belief that it is against the teachings of the Bible is no defense. Judge Jordan concludes that the question involved is one of public importance, and if there is an absence of law in this State in respect to a case like this, the legislature should promptly deal with the matter by proper legislation.

Health Work in the Philippines.—The work of the Bureau of Government Laboratories of the Philippine Islands, as shown by reports received at the Bureau of Insular Affairs, War Department, covers a vast amount of interesting and useful work. A new building, adapted to the needs of the bureau, is now about completed. It will greatly increase its usefulness and will bring the scientific work of the insular government practically under one roof and thus allow the different branches of the work to be mutually helpful. Provision has been made for housing the branches of chemistry, bacteriology, pathology, botany and entomology and for preparing prophylactic and curative serums. An ingenious method has been employed for securing an adequate gas supply. Oriental coals are deficient in gas producing qualities, and importations from Europe or America would be entirely too expensive for the purpose, and even gasolene, which is sometimes used for the purpose, was found to be unsatisfactory. The bureau, therefore, adopted the plan of preparing gas from cocoanut oil, a native product. Strong castiron retorts are brought to a red heat in furnaces and the cocoanut oil is then slowly fed into them, thus producing a very high quality of illuminating gas, free from smoke and tar. The struggle waged by the bureau against rinderpest, which threatened to sweep the islands of draught animals, was eminently successful, and the veterinarians now have a herd of about seventy-five animals in their rinderpest serum herd for the purpose of furnishing a serum with which to inoculate non-immune herds. The demand for vaccine virus has also been very great, for until the advent of the Americans no systematic effort had ever been made to vaccinate the people of the islands, and smallpox, like the poor, was always present. A large number of calves were purchased for the purpose of preparing the virus, and then sold to stock growers. The laboratory reports that it never found a case of tuberculosis when examining calves to be employed for the purpose of cultivating the vaccine virus. A plague prophylactic has also been furnished to the Board of Health in sufficient quantities, and its intelligent employment has brought down the plague cases to such a degree that the islands are now practically free from this dread disease. The cholera epidemic, which began early in 1902, threw such a large burden of routine work on the laboratory that it interfered with much original investigation undertaken by its scientists. The biological laboratory is also investigating human diseases and has in preparation a work on a method of protective inoculation against Asiatic cholera and on amœbic dysentery. The Philippine commission, desiring that the laboratory be of the greatest possible economic benefit to the people of the islands, allows the general public, for reasonable and fixed charges, to secure from the bureau analytical and diagnostic work. As a result, both the public and other branches of the Government have obtained analytical results of all kinds and of the highest scientific accuracy. Fifteen bulletins have been published by the laboratory on medical, veterinary and botanical subjects, some of which have excited wide attention. On the whole, the record of the first year's work of the Government laboratories is one that reflects credit on the Government and the men who have devoted themselves to scientific research.

American Medical Editors' Association.—The thirty-fifth annual meeting of the American Medical Editors' Association, held at Atlantic City in June, 1904, was one of the most successful in its history. The many papers presented, as well as the numerous applications received for membership, is possibly the best indication of the interest displayed in the Society.

Among the interesting papers read and thoroughly discussed were: "Proprietary and Patent Medicines," Harold N. Moyer, Chicago, Ill.; "Military Medical Journalism of the Present Day," Major J. Evelyn Pilcher, Carlisle, Pa.; "Sundown Journalism," T. D. Crothers, Hartford, Conn.; "Medical Illustrations," H. V. Wurdemann, Milwaukee, Wis.; "Medical Journalism of the Pacific Coast," Winslow Anderson, San Francisco, Cal.; "The Medical Press vs. The Modern Plague," William Porter, St. Louis, Mo.; "Reading Notices," W. C. Abbott, Chicago, Ill.; "Imitation Journalism," H. Waldo Coe.

Following an animated discussion of Dr. Porter's article relative to the use of patent nostrums, the following resolution, endorsing the action of Mr. Bok, editor of the *Ladies' Home Journal*, was favorably acted upon: *Whereas*, The public is, and long has been, suffering from the use of nostrums, and from the misuses of medicines; and, *Whereas*, the medical profession and press have endeavored by every means in their power to instruct the laity upon the subject; and, *Whereas*, some journalists either do not understand the true situation, or find it to their pecuniary gain to favor the use of nostrums and pander to the greed of their manufacturers at the expense of the health or even the lives of their dupes among the people; and, *Whereas*,

the eminent editor of the *Ladies' Home Journal,* Mr. Edward Bok, in an able and vigorous editorial on page 18 of the May number of that journal, laid the truth of the matter before his readers, thus aiding in the work of warning and educating and conserving the health and welfare of the public; be it

Resolved, That the American Medical Editors' Association approves and commends Mr. Bok for the intelligent, honest, fearless and well-grounded position he has taken, which has been thoroughly appreciated by us and by the medical profession generally. *Resolved,* That a copy of these resolutions be spread upon the minutes of this meeting, be transmitted to Mr. Bok, and be published in the medical journals throughout the country.

Dr. Porter presented the following resolution bearing upon the death of Dr. I. N. Love, an ex-president of the American Medical Editors' Association:

Resolved, That the members of the American Medical Editors' Association, while mourning the decease of Dr. I. N. Love in the zenith of his manhood and opportunities for usefulness, remember and cherish the recollection of all in his most attractive individuality that made his record so large a part of the history of this Association. *Resolved,* That a large page of our record books be set apart for the resolutions and that a copy be sent with our truest sympathy to the members of his family.

The folloging officers for the coming year were elected: President, Harold N. Moyer, Chicago, Ill.; First Vice-President, C. Evelyn Pilcher, Carlisle, Pa.; Second Vice-President, O. F. Ball, St. Louis, Mo.; Secretary and Treasurer, J. MacDonald, Jr., New York; the Executive Committee, C. E. de M. Sajous, chairman; John Punton, W. A. Young, W. C. Abbott, H. M. Simmons, C. F. Taylor and Charles Wood Fassett.

Hypnotism and Drunkenness.—At a recent meeting of the Society of Hypnology and Psychology in Paris, as reported by the *Evening Post*, an interesting report was read from Dr. Korovine, of the Moscow Asylum for Inebriates, where experiments for the cure of drunkenness by hypnotic suggestion have been carried out, upon a considerable scale, for three years. Dr. Korovine claims 22 per cent. of radical cures out of some 300 patients. He says that out of 323 patients hypnotized 84.4 per cent. did not drink any alcohol for a week, 60.2 per cent. abstained for two weeks, 33.8 per cent. for three weeks, 27.7 per cent. for more than a month, but only 3.1 per cent. for the whole time of the treatment—that is to say, for six months. He thinks that in more serious cases hypnotic suggestion to be effective must be associated with indoor treatment under restraint. Commenting on these facts, Dr. Berillon of Paris explained that when drunkards ask to be hypnotized they are generally very amenable to the influence of suggestion, but often they suddenly change and it is no longer possible to hypnotize them. In that case they have been drinking, and it is necessary to wait until they are quite sober and to treat them fasting. It is said that Dr. Forel, of the Zurich Lunatic Asylum, one of the best hypnotic authorities in Europe, no longer directs his suggestions against the drink itself, but against the habits and companions of the drunkard. He holds that it is not of much use trying to prevent a dipsomaniac from drinking until a radical change has been effected in his social surroundings.

OBITUARY.

Dr. Romeo F. Chabert, one of the oldest physicians in Hudson County, New Jersey, and for twenty years a property holder and summer resident of Asbury Park, died late last Monday at his summer home, on Seventh avenue, Asbury Park. He was seventy-six years old, and for forty-eight years had practised medicine and surgery in Hoboken. He was a member of the New Jersey State Medical Society, the founder and consulting surgeon of St. Mary's Hospital, Hoboken; consulting physician of the Bayonne Hospital, and for many years a member of the Board of Managers of the State Hospital for the Insane at Morris Plains.

CORRESPONDENCE.

OUR PARIS LETTER.

THE QUESTION OF HEALTHY DWELLINGS—A SUPERVISORY LAW IN FRANCE—EXCESSIVE OVERCROWDING OF BARRACK-LIKE TENEMENTS—CHEAP BUILDING SOCIETIES ON THE INCREASE—GERMANY FAR AHEAD IN THIS MATTER, OWING TO PROTECTION OF THE STATE—ROTHSCHILDS' BENEFICENT PLANS.

Paris, France, July 21.

The donation of ten millions of francs that has lately been made by the Brothers Rothschild with a view to bettering the conditions of the working classes by the creation of cheap and healthy dwellings, as well as the inauguration of the first building constructed by the "Society of Hygienic and Cheap Dwellings," have drawn public attention in France to the interesting problem of hygiene in the houses of the poor.

In other countries, as, for example, America, England, Germany, legislation rules the condition of the habitations of the working classes; in England rigorous laws permit the pulling down and expropriation of whole quarters when that is necessary for public salubrity. In Germany certain municipalities, as at Ulm, Stuttgart, Carlsruhe, build model dwellings for workmen, whereas in France the initiative has not been taken by the public authorities, and the only effort of the legislator has merely been a law or bill of encouragement, dating from 1894. This law oversees in each district, or department, the formation of local committees whose mission it is to encourage the construction of salubrious houses either for private persons or for societies, with a view to letting them out to workmen or employees hiring on the proceeds of their labor or on their wages. A committee composed of several deputies and senators, members of the "French Institute," presided over by the Minister of Commerce, and with Mr. Jules Siegfried, a former cabinet minister, and Eugene Gouin, Senator, as vice-presidents, examines the work done, inspires the work, and draws up a yearly report to the President of the Republic.

Besides this organ of official encouragement there is another, but due to private initiative, the French Society of Cheap Dwellings, formed after the Congress of 1889, and whose honorary president is Mr. Siegfried. The building, inaugurated in the Rue de Tretaigne at Monmartre, is a five-storied one and includes twenty small flats, each containing three rooms besides a kitchen and water closet. On the ground floor there is a library and a general store. Everything pertaining to modern hygiene is observed in the building; thus there is no useless decoration, the floors are not parqueted, the moldings are rounded, the walls washable. It is on this model that other buildings are to be constructed, which will serve to lower the terrible mortality incident to its enormous, overcrowded and barrack-like houses in which workmen and their families take their repose after their day's work. The mortality among this class sometimes reaches the high proportion of 80 per 1,000 per year. That is the figure stated by Mr. Siegfried,

who so regrets the want of even elementary comfort so necessary to both town and country populations.

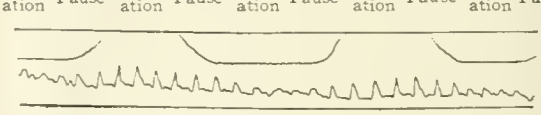
To combat this state of things two solutions are proposed. The erection of new, low-rented houses, such as that of which we have just spoken, or else the adoption of Mr. Cheysson's plan, the cleansing and purifying of old houses, which would be less expensive. The movement in favor of house hygiene dates back about fifty years and was due to Prince Albert in England and to Mr. Jean Dolfus, of Mulhouse, in France, but it has only become important since 1885, owing to the efforts of Mr. Jules Siegfried, of George Picot, the perpetual secretary of the Academy of Moral and Political Sciences, and of Eugene Cheysson of the Institute, who showed up the existing peril, as well as the duty to be performed. In addition to the committees which favored by the law, there are 109 societies devoted to the subject of the erection of economical dwellings, of which fifty-six are coöperative and fifty-one civil societies. Moreover, in France, cheap-building societies have offices in seventy-seven towns. There are twenty-one societies in Paris, three at Douai and Marseilles, two at Calais, Rouen, Tours, Amiens, Lyons, Anjers, Maisons, Alport and Algiers. All have nearly the same aim, viz., the purchase of ground and erection of cheap dwellings either self-contained or collective. Unfortunately the existing building societies have, for the most part, been founded with insufficient funds, while in England the question has been considered as a simple business affair and the English Mutual Aid Societies, very rich, have found there a convenient means of placing their capital, while in Germany (besides the philanthropic foundations which exist there as in England) special resources are available for economical dwellings, derived from obligatory insurance. In France this work has had to be protected by law. Laws of 1894 and 1895 granted to these enterprises certain advantages in the form of fiscal indemnity and lowering of taxes, and again, savings banks have been authorized to employ their personal revenue and the fifth of their fortune in building or acquiring cheap dwelling houses.

Private initiative and, in particular, that of the Civil Society of Cheap Buildings has, with this aim in view, founded societies of credit able to negotiate with building societies or to guarantee them at the "Caisse des Depots et Consignations." The foundation of Messrs. Alphonse, Edmond and Gustave de Rothschild, which in France will be the pendant of the Peabody Foundation in England, will, by means of buildings that are to be erected, be of efficacious help to workmen. This endowment of ten millions is to be employed in building houses with cheap flats for the Parisian population. The revenues are to be employed to give grants to those initiatives of special interest to the working classes.

REMARKABLE PULSE TRACING.

To the Editor of the MEDICAL NEWS:

DEAR SIR: I enclose a pulse tracing showing a rhythm to which I can find no reference in the literature at my disposal. As the tracing shows, the pulse wave becomes markedly smaller during expiration and the post-expiratory pause. It is thus a phenomenon, the opposite to the paradoxical pulse, and in lieu of a better term, I have applied the designation, "The anti-paradoxical pulse" to what it represents. It occurred in a patient suffering from an aneurism of the innominate artery and the diminution of the pulse wave was brought about by the collapsing chest pressing upon the aneurismal sac during expiration. When admitted to hospital this rhythm was very evident to the finger during ordinary breathing. As his heart gathered strength from the rest, it was only apparent during deep respiration and later disappeared entirely. The



Tracing of right radial pulse during deep respiration. Patient holding his breath both at end of inspiration and of expiration.

left radical and left carotid pulses were regular. It seems rational to suppose that such a pulse might be present in similar cases of innominate aneurism associated with a weakened heart.

C. M. COOPER, M.B., M.R.C.S.

SAN FRANCISCO.

SOCIETY PROCEEDINGS.

BRITISH MEDICAL ASSOCIATION.[1]

Seventy-second Annual Meeting, Held at Oxford, England, July 26, 27, 28 and 29, 1904.

FIRST DAY.

The Oxford Medical School.—The history of the origin and development of the Oxford Medical School was made the subject of the address of the President, William Collier, M.D., of Oxford. It was in 1868, he said, that the last meeting of the association had been held at Oxford, and the desire to compare the status of then and now had suggested to him his topic.

Twenty-four years ago, in 1880, he said, when this Association held its annual meeting at Cambridge, the then President, Sir George Humphry, in one of the most eloquent and forcible addresses ever given to the Association, used these words:

"Has there not through the whole period of our academic history been enacted a divorce, a most unnatural divorce, between body and mind—that is to say, between the nurturers of the one and the cultivators of the other? Has not Cambridge more than any university, with perhaps one exception, banished medicine from its walls and the men of medicine from its schools? Can good reason be shown why medicine has been allowed to profit so little by the accumulated liberality of many generations, which has given such impulse to art and literature, to classics and theology, mathematics and philosophy, to astronomy and logic?"

He pointed out that originally the Faculty of Medicine had been placed on par with those of Divinity and Law, and the provisions for teaching and graduating in all these faculties had been made alike.

A little later Humphry gave what was probably the correct answer to his inquiry. For he showed that the College of Physicians in London, founded by the influence of Linacre, with the privilege of licensing practitioners throughout the kingdom, became in time the successful rival of the old Universities of Oxford and Cambridge. As London grew in size and importance the influence of its college increased, and in a short time little was left of the universities beyond the function of giving a preliminary training to the few who could avail themselves of it. In no other European country are there competing corporations similar to our Colleges of Physicians and Surgeons, having power to grant licences to practise. In other countries the universities are the only avenues to medicine.

[1] From advance sheets of the *British Medical Journal*, by courtesy of the editors.

Revival of a Medical School in Oxford.—Why should not the Universities of Oxford and Cambridge take their proper share in the training and education of medical students? This question had for some years previously occupied the thoughts and minds of many earnest men at both universities. Science had already obtained a sound footing. At Cambridge the Honor School of Natural Science had been established as far back as 1851, at Oxford in 1853, while at Oxford the University Museum—the center for scientific work—in which our Sectional meetings will be held this week, had been built, thanks very largely to the influence and exertions of the late Sir Henry Acland.

So long ago as January 5, 1878, an anonymous correspondent, signing himself "A Member of Convocation," wrote a long and bitter letter complaining of the way in which the study of medicine was entirely overlooked at Oxford. As a medical school Oxford, he declared, had within the preceding quarter of a century entirely ceased to exist. No teaching in the preliminary subjects of medicine was being given, and the medical faculty had recently lost even its nominal existence, and now appeared under the head of physical science and mathematics. He attributed this decadence largely to the influence of the then Regius Professor of Medicine, and to the Professor of Physiology. They were ably defended by several of their old students, who showed how much the teaching of natural science at Oxford owed to their personal efforts. The controversy on medical teaching at Oxford was carried on with vigor for many months by many writers, and while all, or nearly all, were in favor of making adequate provision for the teaching of anatomy and physiology at the university, some were most anxious to establish a complete medical school, declaring that in many of the most illustrious medical schools in Germany the hospital population was not larger than it was at Oxford.

A little later another petition was drafted on very similar lines by an entirely different body of men, and was sent to the commissioners who were at the time engaged in investigating the affairs of the university.

In November, 1882, Professor Burdon Sanderson was appointed to the newly founded Chair of Human Physiology and Histology at Oxford, a first step towards the establishment of medical education in Oxford on modern lines.

Development.—Having elected a professor of physiology, it was found necessary to build laboratories and class rooms for the purpose of teaching, and on June 5, 1883, the members of Convocation were asked to grant a sum of £10,000 for this purpose. The resolution met with keen opposition, partly on the ground that vivisection would be practised, and partly on the ground that the expenses were beyond the existing resources of the university. The resolution was carried by three votes.

In the same year (1885), he said, the Faculty of Medicine, which had been merged in natural science, was recreated, and Mr. Arthur Thomson, Senior Demonstrator in Anatomy in Edinburgh University, was elected Lecturer in Anatomy. It needed a man of resolution and fixed purpose to cope with the situation, for when he took up his work in Oxford Mr. Thomson found himself with three students and a small wooden shed in which to teach anatomy—a great contrast to his Edinburgh experience. A sum of money was immediately collected by members of the university interested in the development of the school, and a small temporary lecture room and a dissecting room were built. In the following year the curators of the University Chest built, at a cost of £500, a temporary iron-roofed building with rather more accommodation. By 1891 the lecturer's class had grown from 3 to 67. A sum of £7,000 was now asked and obtained from the university to provide a permanent home for the teaching of human anatomy, and the present excellent building, in which the Section of Anatomy will be held, was built. In a year or two, largely owing to the success of Mr. Thomson as a teacher, the lectureship was converted into a professorship. In 1886 a most important statute was passed, by which students in natural science were exempted from the first public examination in classics known as Moderations. This measure enabled students of medicine after passing their preliminary examination known as Responsions, which might be passed before coming into residence, to devote their first year in Oxford to the study of the preliminary subjects in natural science, and so another and most important barrier to the establishment of a medical school disappeared. In 1891 Sir Henry Acland, who had always interested himself in the study of pathology and bacteriology, inaugurated a new department in bacteriology, and appointed, first, Dr. Menge, of Munich, to take charge of it, and later, in turn, Dr. Bertram Hunt and Dr. Ritchie.

In 1899 a generous medical student, Mr. Ewan Frazer, offered the university a sum of £5,000 toward the expenses of building a pathological laboratory. This sum was accepted, the university at the same time agreeing to supplement it with another £5,000, and to make an annual grant of £250 for upkeep. In October, 1901, the new Pathological Laboratory was opened.

Influence of the School.—For some years a considerable number of medical graduates have been passing forth into the larger world after spending three or four of the most impressionable years of their lives at one or other of the two universities. Have they benefited? The majority of these graduates if appealed to would declare with no uncertain voice that they recognized fully that their mixing with men of their own age, who were taking up other subjects for their life-work, and interesting themselves in other mental pursuits, had done much to widen their own general culture, and to develop in them interests outside their own professional work. Has the university benefited? Yes. The establishment of the medical school on a modern basis has introduced into the university a body of students starting their university career with a definite object in view, and compelled by the very nature of the case to lead a steady, strenuous life, for no student can hope to pass his professional examinations without a due amount of steady work.

But to his mind the greatest advantage to be noted has been the influence the university student has had on the other medical students of the great metropolitan schools. All of us are familiar with the Bob Sawyer type of medical student as depicted by Charles Dickens—that is to say, all are familiar with him in fiction—but as a living type he has for many years ceased to exist. Many can remember the time when any more than usually disgraceful outbreak of rowdyism in London was invariably attributed, rightly or wrongly, to medical students. But this is a matter of the past. The medical student of a quarter of a century ago undoubtedly bore a very bad character in the eyes of the public; he no longer does so. Why the change? Largely because of the influence of the university graduates who have come among them.

Earlier Benefactors.—From Oxford of to-day to Oxford of the past, a few of Oxford's greatest men, members of the profession, who have been associated with the university, were mentioned.

Linacre, who at the age of twenty-four, in 1484, was elected a Fellow of All Souls, and was incorporated a D.M. of the University on his Padua degree, is first to be thought of. While at Oxford he seems to have devoted most of his time to giving lectures in physic and to the teaching of Greek. Not only was he a profound scholar and a successful physician, but he was also a member of the clerical profession—indeed, the last few years of his life were entirely devoted to clerical work. He bequeathed considerable sums of money to both Oxford and Cambridge for the purpose of encouraging the teachers of medicine. The Linacre Professorship of Comparative Anatomy is a reminder of one of our oldest and most distinguished benefactors. It was mainly due to Linacre's efforts that the Royal College of Physicians of London was founded in 1518, he being elected the first president. It was probably due to his influence, too, that a statute was passed in Henry VIII's reign that no person should practise as a physician or surgeon until examined and approved by the bishop of the diocese in which he lived, who was to call to his assistance expert persons in the Faculty.

For some years Harvey, the discoverer of the circulation of the blood, dwelt at Oxford, where he worked at anatomy and made many dissections. He was incorporated a D.M. of the University, and in 1645 by royal mandate was made Warden of Merton College, but did not retain the post long, as the following year, after the surrender of the city to the Parliamentarians, he returned to London.

It was while Harvey was at Oxford that another great anatomist who studied under Harvey was preparing himself for future fame—Thomas Willis, well known to all by his description of the anatomy of the brain, and more particularly by the circle of Willis. Willis was born of Oxfordshire parents within a few miles of our city, and for many years practised his profession in a house opposite Merton College.

Associated with Willis was Christopher Wren, the architect of St. Paul's Cathedral. Born in 1632, Wren left school at the age of fourteen, and was engaged by Sir Charles Scarburgh to act as his assistant and demonstrator at his lectures on anatomy at Surgeon's Hall, London. Three years later, at the age of seventeen, he was entered as a fellow-commoner at Wadham, and at twenty-one was made a Fellow of All Souls, and at twenty-eight Savillian Professor of Astronomy. It was while at All Souls that he made elaborate drawings to illustrate Dr. Willis's work on the anatomy of the brain. In 1679 he made experiments which led him to the invention of a method for the transfusion of blood from one animal to another. It was at the age of about thirty he began to follow the profession of architecture, and one of his first works was this Sheldonian Theater, the first stone of which was laid in 1664 and completed five years later. At the age of nine he was capable of writing an elegant Latin letter to his father, but it was science and mathematics that attracted him. A splendid mathematician, a great experimentalist, always working out the most difficult scientific problems, a distinguished astronomer, and a famous architect all combined in one. No wonder that Barrow described him as a boy a prodigy, as a man a miracle, nay, even something superhuman. He died aged ninety-one years.

The greatest benefactor of the university was John Radcliffe, who was born in 1650 and died in 1714. For nine years he practised as a physician in Oxford, and we are told that he incurred the anger of the older practitioners in the town because he paid so little regard to professional conventionalities. In 1684 he moved to London, and his apothecary tells that he had scarcely been in town a year before he was earning more than 20 guineas a day. His lively conversation, it was said, soon made him the most popular physician in London. He succeeded more by his ready wit than his learning, for while at Oxford his library consisted of some phials, a skeleton, and a herbal. In 1692 he lost some £5,000 owing to the capture by the French of a ship in which he was interested. When his friends condoled with him he replied that it did not matter, for he had only to go up 250 pairs of stairs to make himself whole again. If this be true the physicians' fees in those days would seem to have been very much higher than at present. At any rate, his philosophical way of putting up with a financial loss was admirable—a little more work would put him right again. During his life he gave largely to his old college and to several charities, and at his death he left by will his Yorkshire estate to the Masters and Fellows of University College for ever, to be held in trust for the founding of two Radcliffe traveling Fellowships, the overplus being paid for the purpose of buying perpetual advowsons for the college. In addition he left £5,000 for the enlargement of the college and £40,000 for the building of a medical library. With money derived from his estates two other buildings were erected in this city by his trustees, the Radcliffe Infirmary and the Radcliffe Astronomical Observatory, and money was further granted towards the building of the College of Physicians in London.

Thomas Sydenham (1624-89), who has always been regarded as one of the chief masters of English medicine, was also connected with the university. His career at Oxford was certainly a checkered one. At the age of eighteen he entered as a fellow commoner at Magdalen; a few months later he joined the Parliamentary forces and fought against the Royalists; four years later, 1646, when Oxford and the other royal garrisons surrendered, he resigned his commission, and was on his way to Oxford when he chanced to meet with Dr. Thomas Coxe, who was attending his brother, and who persuaded him to take up medicine. He then joined Wadham College, and the following year was elected to a Fellowship at All Souls. In 1648 he obtained his degree of B.M. in a very irregular manner, as he was created B.M. by command of the then Chancellor of the University without having taken a degree in Arts and with little knowledge of medicine. For a time he studied at Oxford under the Regius Professor of Medicine, whose lectures, we are told, consisted merely in reading the ancient medical classics. Again he joined the army, and became a captain of a troop of Parliamentary Horse. On one occasion he was left on the field of battle among the dead, and lost, as he tells us, a great deal of blood. On another occasion he nearly lost his life at the hands of a drunken soldier, who broke into his bedroom at night and discharged a pistol at his breast. Fortunately the soldier's left hand was interposed and was shattered by the bullet, while Sydenham escaped unhurt. Having again retired from the army he studied medicine at Montpellier, and a year or two later began practice in London. In 1676, at the age of fifty-two, he incorporated as M.B. at Pembroke College, Cambridge, on his Oxford degree, and immediately took the M.D. of that university. It is supposed there were political reasons for his not taking the Oxford degree. By his methods of studying disease and by his masterly description of diseases Sydenham is admitted to have made an epoch in medical science. In 1894 a life-sized statue of Sydenham was presented to the University Museum by Sir Henry Acland and others.

He then went on to speak of present benefactors, and

closed with a forecast of the future of the school and a short reminiscence of the earlier meetings of the Association at Oxford, as follows:

"To-day our association numbers over 19,000 members, and we are expecting more than three times the number who visited Oxford in 1868. More than this—and it is, I think, a matter for hearty congratulation—the influence of our association has grown world wide, for since 1868 branches have been formed throughout India and in nearly all of our colonies. This truly remarkable growth of our association in magnitude, power and influence has been due to the fostering care and unremitting labor of many workers. Into our hands they have entrusted a great inheritance, and it will be our duty to see that no negligence nor unwise and ill-considered action on our part tend in any way to jeopardize its further growth and development and power for usefulness."

Address in Medicine.—Sir William Selby Church, Bart., President of the Royal College of Physicians of London, spoke "On Our Sanitary Needs, with Special Reference to the National Health."

Medicine, he said, having for its object the mental and bodily health of mankind is closely interconnected with the varying circumstances that bear on the conditions under which a people lives. The prosperity of the nation, the conditions under which the labors of the population are carried on, the state of commerce and the arts and sciences, all react on the health of the people, and nothing which concerns the life of the nation is foreign to the subject. Every advancement in science and its application to the arts has a bearing on medicine. To pure science it is directly indebted for means by which the various organs of the body can be examined, the presence of disease demonstrated, the changes in our bodies accompanying disordered health recognized, and, perhaps more important than all, the exact methods of science point out the way in which the more complex questions presented in living bodies should be studied.

It was in the year preceding the Oxford meeting that Lister read at Dublin his paper on the "Antiseptic Principle in the Practice of Surgery," founded on the results of his treatment of compound fractures, abscesses and wounds during the preceding three years. It was at this time also that the infectivity of tuberculous matter began to be generally recognized; twenty years before, Klencke had produced tuberculosis of the lungs and liver in rabbits by inoculation with human tubercle, but he did not pursue his investigations, and his experiments attracted little notice, and it was not until Villemin's work in 1861, and the account of his numerous and careful experiments published in 1868, that attention was again drawn to the subject. Villemin's work was carried on by Sir J. Burdon Sanderson, late Regius Professor of Medicine in this university, who explored and demonstrated the channels by which the tuberculous process is disseminated within the organism, yet many years had to elapse before Koch in 1882 demonstrated that the presence of the tubercle bacillus in all tuberculous degenerations was the essential element.

Growth of Bacteriology.—It was, he said, the adaptation of Pasteur's work and discoveries to medicine, and Koch's demonstration of the bacillus of tubercle in 1882, which led to the revolution which has taken place in conceptions of the nature and cause of many forms of disease, and he drew an interesting picture of Sir William Gull's descriptions of disease processes. How much more hopeful, he said, is the outlook now than when Gull said: "It is now universally acknowledged that the art of medicine is all but powerless in controlling the large class of diseases called zymotic! It may be there do not exist nor may ever be formed by art antidotes to their poisons. But should it be otherwise my duty at this moment still seems clear—that I ought not to stir up your minds to search for such secrets of nature. Upon this search too much time has already been wasted, and an incalculable amount of life has been lost. Specifics will no doubt continue to be sought after, but preventive medicine will more largely obtain the suffrages of the best informed members of our profession. Truly, as he says in another place, "the knowledge which seems exhaustive to-day, may in the changing circumstances of the world be defective to-morrow." For it now seems probable that most, if not all of these diseases, as we already know of some, bear with them their own antidote, and that as Sir John Sanderson has said "Every injurious substance which is capable of being assimilated (in the physiological sense) by a living cell is also capable of exciting in it an abnormal reaction antagonistic to the first."

Internal Secretions.—Another most important step onward in physiological knowledge and its application to the treatment of disease was made when the connection existing between that group of symptoms known as myxedema and disease of the thyroid gland was pointed out. Sir William Gull himself, in 1873, was the first to draw attention to the cretinoid state supervening after adult age, but it was from the researches of Ord, Reverdin, Kocher, Horsley and Murray that the existence of what are spoken of as internal secretions of glands was suspected and proved. Neither in diabetes nor in morbus Addisonii has the administration of the pancreas or the suprarenal glands been followed by any marked or constant beneficial effect on the disease. The researches of Schäfer and Oliver have proved the physiological action of the extract of the suprarenal glands to be both constant and powerful, and further researches may lead to a better knowledge of the physiological functions of the internal secretions and enable therapeutic use to be made of them.

Tropical Medicine.—In other lines of research the progress made is not less remarkable. The ancients were well acquainted with the commoner forms of intestinal worms, although they were ignorant of the remarkable phases presented in their development. They have left full and accurate descriptions of the clinical symptoms produced by them and the means which should be adopted for their cure. Slowly and gradually the natural history of malaria and yellow fever has been worked out. Already the work done, mainly under the auspices of the Liverpool and London Schools of Tropical Medicine, has begun to bear fruit not merely by increasing knowledge of malaria and certain other forms of tropical disease, but by having in the short space that has elapsed had a marked influence in diminishing sickness and mortality in places which were so deadly to European life, that trade could hardly be maintained with them. Nor is it only in these hot-beds of fever that beneficial results have been obtained, as Professor Boyce's account of antimalarial measures taken at Ismailia shows. The result of the sanitary work put in action by the authorities of the Suez Canal has been eminently satisfactory. The attacks of malaria in a population consisting of about 1,900 or 2,000 Europeans and 7,000 natives have fallen from 2,089 in 1897 to 209 in 1903, and the mortality has correspondingly lessened. These highly satisfactory results have been obtained at comparatively small expense, the Canal Company having expended £4,400 in filling up and draining the marshy ground, whilst the special antimalarial forces—the Drainage and the Petroleum Brigades—

have together cost £720 a year, figures which contrast most strikingly with a previous "expenditure of £15,000 on works designed with the intention of improving the sanitary condition of the town and £13,000 in medicine and medical attendance," without the production of any beneficial results. The mystery surrounding the sleeping sickness of Africa has been partially dissipated by the discoveries of Castellani, Bruce and Nabarro, and the remarkable life-cycle of the trypanosoma is in a measure unraveled. A similar chain of events appears to occur in Texas fever, and probably in other morbid states the lower forms of animal life play a much more important rôle than is yet recognized. Recent investigations by Leishman, Donovan, Ross and Christophers tend to show that the condition of chronically enlarged spleen and cachexia we have been accustomed to ascribe to malaria is more probably dependent on another distinct microorganism.

Preventive Medicine.—The speaker then spoke of the outcome of the results of preventive medicine. He first contrasted the conditions as seen in Ancient Greece, quoting Plato. Roman sanitary science remains for the most part an unopened chapter in medicine, but it is certain that in the larger cities some municipal organizations similar to, if not identical with, those which had been in force in earlier Greek times were present. Before the time of Antonius Pius (A.D. 136) recognized medical practitioners were exempt from ordinary civil obligations and local taxation, but their numbers had so largely increased by his time that it became necessary to limit the number of recognized practitioners in each city who should enjoy this immunity; and Pliny, who seems to have had nearly as bad an opinion of the profession as Cato, complains that the law unduly safeguarded physicians, and that they alone could kill a man with impunity. The better regulation of the profession in this country may be said to date from the institution of the Royal College of Physicians in 1518, which was entrusted with the general supervision of all persons not graduates of the two English Universities of Oxford and Cambridge who should practise physic throughout England, and to the granting of a charter by Henry VIII. to the Barber-Surgeons twenty-two years later.

Medical Legislation.—In an extremely interesting manner he then traced the development of the humanitarian spirit throughout the Calvinistic times and showed the connection between the greatly increased interest in the humanities with medical legislation. These suggested the Anatomy Act of 1832 and the Medical Act of 1858.

Poor Law and Public Health Legislation.—Contemporaneously with the awakening of public opinion to the necessity for a reform in the constitution of the medical profession, by which the public might be able to discriminate between those who were and those who were not legally qualified to practise, the need for increased legislative power for sanitary purposes was recognized. The public mind had been aroused by the ravages of cholera, which spread through the land in 1831-32 and to a less degree in 1848-49; while the revelations of the conditions under which the laboring poor were living contained in the reports of Drs. Neil Arnott, Kay, Southwood Smith, Mr. Chadwick, and others to the Poor-Law Commissioners appealed to all but the most thoughtless, and prepared the way for sanitary legislation.

The dissolution of the monasteries and other religious foundations in the sixteenth century led to the whole country being flooded with pauperism, for however self-indulgent the ecclesiastics may have been, they had always exercised supervision over the poor on their estates, and administered relief as required to those who were in the employment of the religious houses or of their numerous tenants. This deplorable condition of the nation gave rise in the early years of Elizabeth's reign to the present Poor Law, and during her reign, and that of her immediate successors, very stringent Acts of Parliament and municipal regulations were passed not only for the removal and prevention of nuisances, but also dealing with vagrancy and mendicity, and provision for the relief of pauperism and the care of the impotent poor. From that time onward numerous local Acts on a variety of subjects bearing on the National Health were added to the statutes, but no comprehensive scheme was instituted until we come down to the Victorian Era, and the passing of the Public Health Act of 1848 may be taken as the date of the rise of a fresh branch of medicine—Preventive or State Medicine. It was then that the State publicly recognized what Hobbes two hundred years before when writing "of the Commonwealth" had indicated as the function of the governing power. The health of the people, both bodily and mental, is the principal asset of the nation. Without a vigorous and energetic population no nation can make progress, and coincident with the cessation of progress is the commencement of decadence.

Speaking on several questions of Public Health he rehearsed the specifications of the Public Health Law, spoke of the Ineptitude of the Treasury Reports and commented on the Duties of Local Boards and Medical Officers.

Need for Supervision of the Sale of Foods.—The need for such increased supervision was forcibly brought to the attention of the commissioners appointed to inquire into arsenical poisoning. At the present moment there are no means by which the officers, medical or other, of County, Borough, Urban or District Councils who are responsible for the local administration of the Acts relating to the sale of food can enter the premises and obtain information concerning the nature or foodstuffs or the process of their manufacture.

The needs for sanitary food supervision were recognized, and he dwelt particularly on the folly of permitting patented foods to be placed on the market without proper chemical investigation. At present, he said, the maker of a foodstuff sold under a fancy name—Grape Nuts, Force Food, etc.—is under no obligation to submit to any authority the composition of its ingredients. It is only after the foodstuff has been placed on the market that any control can be exercised by samples being taken for analysis, which, although showing the absence or presence of deleterious matter, gives but little guide to the suitability and value of the preparation as a food. The enormous bulk of these fancy and largely advertised foods on the market, both home made and imported, renders it essential that further power in the supervision of food should be placed in the hands of the health authority.

Rural Hygiene.—The necessity for sanitary regulations being so much greater in large towns with their dense populations, manufactures, and difficulty in disposing of their refuse naturally led to the earlier efforts in the direction of improved sanitation being especially directed to their most urgent needs, and hence has arisen that the methods of sanitation applicable to large towns have been accepted by the public as the only ones, and are imitated in rural districts to the great loss and harm of the community. It is greatly to be regretted that Mr. Chadwick's doctrine that not only domestic sewage but that all sorts of refuse are best removed by the scour of running water has received

such general adoption. Whilst the advantages of the present system of sewerage, although ruinously expensive, is undoubtedly very great in our large towns, and must perhaps be perpetuated, it is not in accordance with common sense that it should be recklessly applied throughout the country. The disposal of the liquid sewage not only of our large towns, but of our villages, villa residences, and country gentlemen's houses, has become a most difficult problem for modern sanitarians. No one has any more justification in injuring his neighbor by wilful or culpable negligence of sanitation, or by the means he takes to protect himself from the evils he has created, than he has in appropriating his neighbor's goods or trespassing on his premises. "In rural and semirural districts the individual ought no more to ask others to keep him clean than he asks others to feed him or clothe him." The conscience of the public and of the individual needs awakening to the immorality of injuring the public weal for private convenience. We daily see instances of small towns and villages expending vast sums of money in systems of sewers and sewerage works. A system of sewerage necessitates a constant water supply far in excess of the needs of the inhabitants for domestic use; it introduces a source of danger of pollution for the springs and wells of the locality, and renders necessary the introduction of waterworks to supply uncontaminated water—if, haply, such can be found—brought, it may be, from a distance, and entails a heavy and permanent charge on the locality. The interest of the money thus spent would in many instances provide for the necessary expenses which a proper system of scavenging would entail.

He closed with some remarks on Urban Hygeine which bore more particularly on the problems in London.

(To be Continued)

NORTH BRANCH PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting held May 12, 1904.

The President, Samuel Wolfe, M.D., in the Chair.

Physicians' Bookkeeping.—Dr. Mordecai Price read a paper with this title. He stated that in the early years of his practice he had tried almost every kind of book for the purpose on the market, purchasing a new kind almost yearly, which became very expensive as well as annoying, after which he finally began keeping merely a list of calls, in book form, which were afterward entered separately, visit by visit, in a ledger, each patient being given a page, the transferring being done either at the end of a day or a week. This method he felt was incomparably better than the book ruled thirty-one spaces (one for each day of the month), as the latter gave no room for memoranda, while in the ledger one could enter in detail the time consumed, particulars of services rendered, etc. With this method, the patient's account is concentrated, the quarterly sending out of bills is much facilitated, and if a patient asks for an itemized statement, it can be rendered in a very short time; and no matter how long standing the account, it is of easy reference. He considered this method was one that would be sustained in a court of justice, citing an instance in which he had operated on a difficult case of gall-stones, the patient dying; he was compelled to present his bill in the Orphans' Court, and the judge questioned the amount thereof. With the ledger kept in this form, he was able to state exactly the character of the operation and the difficulties encountered, with the result that his bill was allowed. In reference to collecting bills by legal measures, he felt, as a rule, there was very little accomplished thereby.

Dr. L. W. Steinbach felt that the method outlined by Dr. Price would not be sufficient in court, as he stated that every entry must be made first in a daybook. His method is to keep a visiting list, with each visit to be made marked with a dot, and when the visit has been made he makes a stroke in place of the dot. In addition, he carries a prescription blank, put up in pad form with a stub to it, on which he enters a brief history of the patient's condition, the day, date and hour, at the time of the visit; the work at the office being entered in the same manner on a sheet, but a little more fully. The entries from these blanks are afterwards transferred to the ledger. He recommended that bills be sent out every six months (not more frequently than every three months), believing that this was ample time for the regular patients, and that most of the transient patients who would pay paid as they went along. He believed that the best method of collecting was to have accurate bookkeeping and send out accounts every six months, recommending the regular commercial double entry bookkeeping. With the books kept in this manner, an itemized statement can be furnished in very short order, if requested. He also laid stress on the importance of accurate history keeping.

Good Mode of Collecting.—Dr. Wilson Buckby stated that it was a notorious fact that physicians were the poorest bookkeepers in the city, and emphasized the importance at the present time, with the large increase in the number of physicians, of having the accounts kept in such a manner that they would be sustained in court. He did not feel that Dr. Price's method would be sustained in the courts, as he did not view it as a book of original entry, and recommended a combination daybook and ledger, wherein would be enumerated the detail of the services, the charge, the time spent, and expense to which the physician was put for apparatus, etc. He also referred to the fact that hieroglyphics, such as "O" for office visits, or a dash or cross, etc., indicating visits, would be entirely excluded, the requisites being that it must be a book of original entry in plain writing. He believed that in many instances the doctor was his own best collector, and that in a practice of about a quarter of a century he had had two collectors. The method of the first was to go from house to house and if they could not pay him anything get them to name a date when he would call, at which time he was sure to be on hand. The method of the second was quite similar. He stated that since discontinuing the driving and going out at nights except in cases of urgency his practice had materially decreased.

The Legal Way.—Dr. I. C. Gerhard stated that he had frequently been called into the Orphans' Court to prove his claim against a decedent's estate, and that he felt the subject of physicians' bookkeeping resolved itself into three heads: (1) The easiest way to keep books; (2) the legal way, and (3) the easiest legal way. He stated that there was no law on the statute books requiring that the books be kept in a certain way, and also that he did not think the judges desired to be exacting, the requirement being that the book should contain a daily entry of each visit, with the name of the patient and list of the medicine furnished, with the price which custom has fixed for the service. He stated that he had a claim ruled out in the Orphans' Court which had been kept in a thirty-one column book, and that in the same case an iceman had merely presented slips of paper and had his claim admitted. He recommended that a page be devoted to each patient, in which the services, etc., be entered in detail, and that the bills be sent out monthly; and believed very good results would be attained by this method.

Dr. J. Cardeen Cooper related an instance in which he had a bill reduced in the Orphans' Court from $5 a visit to $2 a visit, the judge ruling that that was the customary fee in this city, notwithstanding that the patient had previous to his death paid him $5 a visit, as the book showed no evidence of the acquiescence in such a fee by the patient.

Dr. Henry Beates, Jr., referred to the necessity for the books showing the name of the party to be charged, the name or member of the family to whom the services were rendered, date and services in detail, charges, etc., without which the books would be useless in a court of law.

Dr. A. Bern Hirsh stated that he had talked with a legal gentleman of large experience in Orphans' Court work, and that in order to secure the introduction of the books, the entries must be able to speak for themselves; in other words, the entry in the book of original entries should contain the name of the person responsible for the account, the date, the place where the service was rendered, the name of the patient, the nature of the illness, the nature of the treatment, and the charge. He called attention to the fact that the loose-leaf ledger had been decided to be legal, and believed that this method with a convenient ruling would be a timesaver to the physician. He exhibited some sample pages thereof.

Monthly Bills.—Dr. Louis Jurist stated that he had never attempted to collect a bill legally, and felt that the standing of the professional man in this country was too commercial. He believed that the charge should be regulated according to the circumstances of the patient. He did not approve of attempts to collect bills legally; and believed that the best result would be obtained by keeping the books posted up regularly, sending out bills once a month; and to perfect strangers, so soon as the services are rendered.

Dr. Walter L. Pyle deprecated the method of a "per visit" charge, and believed that the bill should be regulated, (1) by the amount of service rendered, and (2) by the circumstances of the patient. He believed the bill should be sent "For professional services rendered," and did not believe much success would be attained by going into court to collect a bill, with the exception of the Orphans' Court, with which latter, being an ophthalmologist, he had had no experience.

Dr. Wendell Reber felt that better results would be attained by sending out bills more frequently, believing that they should, excepting in special cases, be sent out monthly, while many of the general practitioners only sent them out once in two, three or six months. He referred to a case in which he had rendered a man a bill for services rendered to his wife and child, at the end of the month, and that this man requested that this be done in the future at any time any services were rendered to any of his family.

Send Out Bills Regularly.—Dr. A. M. Eaton felt that many physicians were very reckless in the matter of sending out bills, as many sent them out only semi-annually, whereas he felt better results would be obtained by being more frequently rendered. He believed that they should be rendered at not longer intervals than three months. He referred to the case of a physician who asked a friend to loan him $100. The friend requested that he allow him to go up to his office and make out some bills for him, which was done, with the result that bills for $300 were made out in less than ten minutes, over $150 of which was paid in five days. He referred to the immense amount of money which was lost by the profession. He also referred to the large number of people who were able to pay who sought free treatment at clinics, etc., which he felt should be prevented if possible, and also the people who make a practice of not paying the Doctor's bill. He believed that the formation of an association with the support of the county society, for the collection of accounts, with collectors personally calling on the debtors, would be of much value.

C. W. Van Artsdalen, Esq., of the Philadelphia Bar, stated that a book to be admitted in evidence in the courts need not be in any particular form, so long as it possessed the requisites of a book of original entry, which were (1) that the entries be made at or about the time the services were rendered; (2) the date of the service; (3) the name of the party charged; (4) the designation of the party to whom the services were rendered; (5) the services in detail, and the charge therefor, together with the costs of apparatus, etc. In order to prove the claim in the Orphans' Court, all these requisites must appear on the face of the book, as this being a proceeding in which the other party is dead the claimant is not a competent witness. In a proceeding in the Common Pleas against a living debtor, the physician would be allowed to testify in his own behalf, and in that instance might be permitted to use a book which, by reason of being made in hieroglyphic characters, could not be offered in evidence, as a memorandum to refresh his memory, provided the said memorandum was made at or about the time the services were rendered; but the books should always be kept in such a manner that they will possess all the requisites of books of original entry and be admissible to any court having jurisdiction in these matters.

Dr. J. Thompson Schell referred to the case of a physician who had died with a considerable amount of money owing him, but by reason of the fact that nobody could understand his bookkeeping his widow was able to collect but very little thereof. He recommended that the books be kept in such a manner that anyone could understand them, and felt that every man owed it to those dependent upon him to do so, as accidents are so liable to occur.

Dr. William H. Good referred to the class of patients who after paying a physician one or two visits and running up a bill go elsewhere, many times in addition boasting that they do not intend to pay the Doctor's bill, one of this character having recently come under his care.

Value of Organization.—Dr. Frank C. Hammond referred to the practice in Augusta, in which city the profession is thoroughly organized, where each physician has in his office a large printed card stating the fee for each office visit, each house visit, each of the various operations, etc., below which price no physician will take a case. He considered that this consistently demonstrated the value of organization of the medical profession.

Rid to Community of Illegal Practitioners.—Dr. Henry Beates, Jr., referred to the fact that the courts would fix the fees of a physician at such an amount as has been decreed by custom. He urged the necessity for the protection of the regular physicians by statutory enactments calculated to rid the community of illegal practitioners. He also remarked the fact of the attack upon the constitutionality of the legislation providing for medical State board examinations as a prerequisite to the permitting of physicians to practice, citing from the opinions of eminent jurists who had sustained it. He believed that the profession should receive more and higher recognition, which could best be attained by protective legislation and the eradication of the irregular practitioners.

BOOK REVIEWS.

Materia Medica, Pharmacology and Therapeutics: Inorganic Substances. By Charles D. F. Phillips. Third Edition. Longmans, Green & Company, New York, London and Bombay.

It is now twenty years since the first edition of Phillips' Materia Medica was projected, and ten years since the second edition appeared. During this time an immense advance has been made along the lines of pharmacological research, and we are pleased to note that in this third edition the author has kept abreast of this new advance, and practically rewritten his Pharmacology, as this third edition is an almost entirely new work. Most of the sections have been revised and rewritten and a full discussion has been accorded a number of the new remedial agents.

We feel that the factor which is of particular value in this work is the rich therapeutic experience of the author and the full therapeutic discussions which have been incorporated in it. These far outreach the discussions on pharmacology proper, and are so arranged as to make, we believe, a very useful and practical work on general therapeutics.

The captious might be inclined to believe that a little too much attention has been given in the therapeutics to a haphazard gathering of individual experiences from the medical journals, but when it is borne in mind that the author has digested these experiences of others and incorporated them with his own, this criticism seems of little weight.

The work is extremely suggestive, even though at times the pharmacological discussions fall below the level of modern research. It can be recommended as a practical and useful volume, particularly for practitioners.

Pain and Its Indications. By Dr. E. E. Hill. G. P. Engelhard, Chicago.

Dr. Hill's Manual contains many valuable suggestions for the treatment of pain. It is much more, however, than merely a compend of remedies that can be used to alleviate pain. Pain, while one of the most important symptoms of disease, is also a true conservative process since it points to the necessity for the removal of some pathological condition to which it is due, rather than merely the deadening of discomfort by anodyne drugs. Dr. Hill has, we think, avoided the Scylla of merely symptomatic treatment of pain without falling into the Charybdis of writing a complete textbook of all the ills accompanied by pain to which flesh is heir. As it is, however, we doubt whether the book will not prove a source of some unthinking medication by those who will not recognize its diagnostic as well as therapeutic helpfulness.

A Practical Treatise on Medical Diagnosis. By Dr. J. H. Musser. Fifth Edition. Revised. Lea Brothers & Company, New York and Philadelphia.

It is undoubtedly one of the most encouraging signs in present-day medicine here in America that there should be so much demand for books on diagnosis. It is not so long since the great cry was for books on treatment. There has come a very general realization, however, that treatment must mean very little unless the exact nature of the disease from which the patient is suffering be diagnosticated. It is especially encouraging, then, to find that so excellent a volume as Prof. Musser has provided, so thoroughly scientific and complete, has received the attention it deserves and goes so rapidly into its fifth edition.

The present edition has been increased considerably in size and yet there is not a single thing in its pages that is superfluous. Indeed, in spite of its apparent length there is much evidence of judicious condensation. None of the most modern suggestions have been omitted. In this respect indeed the work is very full and contains a number of excellent tables sure to be helpful to the busy physician.

A System of Practical Surgery. By Prof. E. von Bergmann, of Berlin, Prof. E. von Brüns, of Tübingen, and Prof. J. von Mikulicz, of Breslau. Volume 2, translated and edited by Prof. William T. Bull and S. C. P. Flint. Lea Brothers & Company, New York and Philadelphia.

The second volume of this system has just appeared. It is a worthy companion of the first, and all that we have had occasion to say in commenting on the first volume, regarding the general character of the work, its scope, its completeness, we can thoroughly endorse in our review of the second volume.

The present volume deals more particularly with the surgery of the neck, thorax and spinal column. Malformations, injuries and diseases, in their respective aspects, are very thoroughly considered in twenty-six chapters. Nothing is left out that we can find, every possible condition and complication of a surgical nature that has ever been described is here considered in a sound, practical and thoroughgoing manner.

In one regard we note a distinct advance over the first volume, in the large amount of illustrations in the present text. It may be that the subject has lent itself more readily to illustration; at all events, the value of the volume to the practitioner is vastly enhanced by the rich store of well selected and useful illustrations.

The work is too large to consider in detail, so that we can practically only repeat our expression of opinion that up to the present time no work of the same class has appeared in English. The completed system promises to be a classic for all time.

Adolescence, Its Psychology and Its Relations to Physiology, Anthropology, Sociology, Sex, Crime, Religion and Education. By G. Stanley Hall, Ph.D., LL.D., President of Clark University and Professor of Psychology and Pedagogy. In Two Volumes. D. Appleton & Company, New York.

To faithfully mirror within the narrow confines of a book review some of the important features of these volumes of Dr. Hall's is beyond the ability of the present writer. He can only state his impressions, believing the work one of such transcendent value as to leave the mere words of acclaim a shadowy mockery of the real thing.

No work of such a serious and thorough character bearing on the growing human being is known to us. It is, we believe, destined to be a classic for all times and a work that should be made a part of every man's liberal education.

To the physician who understands and correctly estimates his large opportunities as a guide to the father and mother in the healthy development of the family, Dr. Hall's work makes a special appeal. The scientific language, at times overpowering in its technicalities, is no bar to the general practitioner's understanding, and from its many pages much inspiration and practical concepts may be gathered.

We believe this an invaluable work—the result of many years of hard work by one of America's most brilliant teachers—and one deserving, if not demanding, a place in the library of every physician of intelligence and cultured aspirations in this country.

Progressive Medicine. Edited by Dr. Hobart Amory Hare. Volume 2, June, 1904. Lea Brothers & Company, New York and Philadelphia.

The second number of the new series of Progressive Medicine follows the pattern of its June predecessors in taking up the Surgery of the Abdomen, including Hernia, by W. B. Coley; Gynecology, by John G. Clark; Diseases of the Blood and of Metabolism, by Alfred Stengel, and Ophthalmology, by Edward Jackson.

The marked reduction in price of this quarterly places it within the power of every practitioner to really keep abreast of the times, and one need never be in the "back woods" with this incomparable series of digests before one; for these are not mere abstracts, or clippings, pasted on sheets and thrown together on a page by the printer's art, but carefully worked over, compared and critically selected contributions which reflect the distinct "Fortschritte" made in medical science and the practitioners' art.

Graves' Disease with and Without Exophthalmic Goiter. By William Hanna Thomson, M.D., LL.D., Physician to the Roosevelt Hospital, New York, formerly Professor of the Practice of Medicine, New York University Medical College. William Wood & Company, New York.

Dr. Thomson's purpose in this monograph is to emphasize the fact that the symptoms of Graves' disease are by no means necessarily connected with any disturbance of the thyroid gland, or of its accessories. He gives a series of clinical histories of 28 patients, in whom there was no evidence of any involvement of the thyroid, and compares their cases symptom by symptom with the clinical histories of 42 patients who had the usual goiter seen in what is called exophthalmic goiter. Dr. Thomson succeeds in making out a very good case for his theory. There are many physicians now who consider that certain latent forms of Graves' disease may exist without any symptomatic involvement of the thyroid. The evidence may not yet be a demonstration, but it is very nearly so. There is no doubt that these clinical studies will be of value for those interested in Graves' disease and cognate affections.

A Manual of Fever Nursing. By Reynold Webb Wilcox, M.A., M.D., LL.D., Professor of Medicine in the New York Post-Graduate Medical School and Hospital. P. Blakiston's Son & Co., Philadelphia.

Dr. Wilcox's monograph on the treatment of fever has a very interesting subject. The manual includes chapters on all the forms of fever, the continued and intermittent types, as well as the exanthematous and also the thermic form, with its phases of heat exhaustion and insolation, which are of such special interest at the present season of the year. The book generally is of rather theoretically conventional character with the air of being a compilation instead of an expression of results gained from actual practice. There is not as much in it as in most text-books of medicine with regard to these special subjects, so that we find it difficult to understand just what place the monograph is meant to take for the student and practising physician.

International Clinics, a Quarterly of Illustrative Clinical Lectures and Specially Prepared Clinical Articles on Treatment, Medicine, Surgery, etc. By Leading Members of the Medical Profession Throughout the World. Vol. I., Fourteenth series. J. B. Lippincott Company, Philadelphia.

The present volume of the International Clinics contains some excellent practical and suggestive articles. The first article in the volume, "The Chloride Reduction Treatment of Parenchymatous Nephritis, by Widal and Javal," is especially likely to attract attention. The subject is very well stated in the second sentence—"With four arteriosclerotic patients suffering from interstitial nephritis, the daily absorption of ten grams of sodium chloride was found to produce neither edema nor any other disorder. Whereas, with two patients out of three suffering from parenchymatous nephritis, this dose gave rise to extensive edema." The conclusion of the study is that the nature of a food is less important in nephritis than its content of salt.

Other interesting articles in this volume are on the therapeutic applications of colloid silver, by Drs. Netter and Salomon, physicians to the Paris hospitals, and two articles on the non-operative treatment of various pathological conditions of the genital tract in women. An especially interesting article is that by Dr. Pritchard, of New York, on peripheral neuritis. In general it may be said, however, that too much space is given to an excellent but after all conventional review of the recent literature—a feature which every medical journal seems to consider it advisable to emphasize just now. Old subscribers to the Clinics used to rejoice in the fact that it was different from the others.

What we owe to Experiments on Animals. By Stephen Paget. The Scientific Press, Ltd. The Case Against Antivivisection. By Stephen Paget. The Scientific Press, Ltd., London.

These two little volumes which the writer calls pamphlets are really condensations of longer articles. They contain in brief all that it is necessary to know in order to convince any doubter of how much has been accomplished for medicine by experiments on animals and how much harm therefore would likely result if the anti-vivisectionists were to succeed in their program of the limitation of animal experiments. Not infrequently it happens that physicians wish to know where they can obtain in condensed form just such information when for some reason in their towns the anti-vivisection crusade becomes more active than usual. Nothing that we have ever seen so completely fulfills this purpose as these two little volumes. Here there is ample material for demonstration provided, of course, they are approached with good will.

BOOKS RECEIVED.

Electrodiagnosis and Electrotherapeutics. By Dr. Toby Cohn. Translated by Dr. F. A. Scratchley. 8vo, 280 pages. Illustrated. Funk & Wagnalls, New York and London.

Medical and Surgical Report of the Presbyterian Hospital in the City of New York. Volume 6. 8vo, 331 pages. Illustrated. Trow Directory Printing and Bookbinding Co., New York.

Tuberculosis and Acute General Military Tuberculosis. By Dr. G. Cornet. Edited by Dr. W. B. James. 8vo, 806 pages. W. B. Saunders & Co., Philadelphia, New York and London.

Railway and Other Accidents, with Relation to Injury and Diseases of the Nervous System. By Dr. Allan McLane Hamilton. 8vo, 351 pages. Illustrated. Wm. Wood & Co., New York.

Diseases of the Intestines and Peritoneum. By Dr. H. Nothnagel. Edited by Dr. H. D. Rolleston. 8vo, 1,032 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

A Text Book of Mechanotherapy, Massage and Medical Gymnastics. By Dr. Alex. V. Grafstrom. Second edition. 12mo, 200 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

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ORIGINAL ARTICLES.

REPORT OF A CASE OF RUPTURED ECTOPIC GESTATION.[1]

BY JOHN W. COE, M.D.,
OF NEW YORK.

THIS case is reported somewhat in detail, not because of the rarity of the condition, but on account of the difficulty presented in diagnosis:

C. T. C., aged twenty-nine years, married nine years; family history negative; habits excellent.

Previous History.—Eight years ago patient was suddenly seized with an attack of pain, general over lower abdomen. This was so severe that a hypodermic of morphine was necessary. A good recovery followed. The patient, at that time, lived in another city and the attending physicians made the probable diagnoses of gravel. Two years later there was a similar but more severe attack, the pain persisting for about two days. This also required morphine. The diagnosis of gravel was again made, some small particles being recovered by the physician. Since that time the patient has been very well. There has never been any evidence of an anemia.

Menstrual History.—Patient has always been regular except that preceding the two attacks of gravel there was some slight disturbance of this function. The last regular period before the present sickness began on November 29, 1903. One week later, on December 6, there was a slight flow for one day. At this time the patient felt perfectly well.

Present Illness.—Patient was aroused in the middle of the night of December 11 by a pain over the lower abdomen. This disappeared after urination, but was followed by a marked chill of about two minutes' duration. By morning all symptoms had disappeared and the patient decided that she had again passed gravel. No physician was called. She was then around, as usual, until the afternoon of December 18, when she was suddenly seized with a sharp pain over the lower abdomen, not at all localized. This was accompanied by nausea, vomiting and marked weakness.

Physical Examination and Course of the Disease.—The patient was first seen about three hours after the onset of the attack. At that time all acute symptoms had subsided. There was no tenderness or rigidity. Temperature and pulse were normal. The case was then considered one of gravel and plenty of water with bicarbonate of soda ordered. The next morning the patient was seen by one of the best known consulting physicians in the city, who agreed with the above diagnosis.

Examination of the urine was as follows: Clear, amber, acid, acidity of 10 c.c. urine = 10.8 c.c. n-10 NaOH (Normal being 2-4 c.c. of n-10 NaOH); Sp. gr., 1.040; albumin absent; glucose absent. Urea, 2.4 per cent., uric acid 0.163 per cent. Microscopically, no casts or crystals were found, but red blood cells were fairly numerous. The patient remained in bed during that day and night and was in excellent condition. The next morning, December 20, while still in bed, she suddenly felt very weak and fainted several times. There was some nausea and a dull, heavy pain was complained of in the right lower abdomen. Urination was accompanied by a sharp pain. At the time of the examination by two physicians a little later there was a decided change in the condition. Pallor was marked and patient could scarcely be roused enough to answer questions. The pulse was feeble, from 115 to 120. On palpation slight tenderness was complained of over right side of abdomen and this could be traced up toward the kidney of that side. Vaginal examination elicited no tenderness or evidence of any hemorrhage. A ruptured pregnancy was thought of but the previous history with the urinary condition and absence of anything by vagina made us think that we were dealing with a calculus somewhere in the urinary tract and that this had ruptured through giving a profuse hemorrhage.

Blood examination on this day showed: Red blood cells, 3,100,000; white blood cells, 21,000, Hb., 55 per cent. Differential count, polynuclears 73.0 per cent.; lymphocytes, 14.8 per cent.; large mononuclears 12.0 per cent. There was a moderate polychromatophilia and slight deformity. The patient soon began to improve under slight stimulation. She was seen that afternoon by another consulting physician and operative procedure was advised against.

The afternoon temperature on this first day was 101.8° F., and the pulse 116, with the general condition improving. During the next three days the temperature varied between 102.8° F. in the evening and 101° F. in the morning, the pulse gradually becoming slower and stronger. The patient was then seen by one of the best-known general surgeons in the city. He would not venture a positive diagnosis, but thought the condition either an unusual form of appendicitis or an extra-uterine pregnancy. As the patient was improving and nothing definite could be made out by abdomen or vagina operation was advised against. During the next two weeks the temperature remained irregular, varying between 102.2° F. in the evening and 100° F. in the morning. The general condition and the blood steadily improved. On December 26, Dr. Wm. M. Polk was

1 Received for publication April 30, 1904.

called in consultation and at once pronounced the case one of ruptured tubal pregnancy. At that time a good-sized mass could be plainly felt on the right side. The patient was kept very quiet and abundant nourishment given preparatory to an operation. The lowest temperature reached during the twenty-four days which elapsed between the apparent rupture of the sac and the day of the operation was 99.4° F. in the morning and 100.2° F. at night, the pulse getting as low as 82.

At the operation on January 10, 1904, a mass the size of a large egg was found in the right broad ligament. In the center of this mass there was a small cavity, the surrounding wall being mostly of clotted blood. The ovary was adherent to this mass. In the pelvis and Douglas culde-sac was considerable old blood, evidently from the original rupture. Nothing was found to lead one to think that the two attacks of so-called gravel of previous years were similar to this illness.

Pathological examination by Dr. J. S. Thacher showed placental tissue and clusters of decidual cells around the small cavity in the center of the mass.

The patient's convalescence was uneventful. Certain points in connection with this case seem to deserve particular notice.

The urinary condition of high specific gravity, high acidity and containing red blood cells, especially with the history of previous attacks of gravel, was misleading. It should be added that specimens of urine examined were not obtained by catheter. Early in the attack, before anything could be made out by the vagina the acute anemia was the only finding which should have made us more strongly suspect a ruptured pregnancy. The red cells and hemoglobin were reduced nearly one-half and with this there was, on the day of the rupture, a leucocytosis of 22,000. Two days later there was marked polychromatophilia and variation in the size and shape of the cells with beginning regeneration as evidenced by the presence of normblasts.

SOME INTERESTING OBSTETRIC EXPERIENCE.[1]

BY J. J. GURNEY WILLIAMS, M.D.,
OF PHILADELPHIA.

In my work among the lower classes I have had the opportunity of seeing quite a number of interesting and difficult labors. I regret that I have not taken the histories in several cases of as much, if not more, interest than those reported in this paper. It must be remembered that three of these women were delivered under the most trying and unhygienic surroundings, without the assistance of trained nurses and amid everything but cleanliness. The woman dirty, the bedding filthy, no clean towels, and hot water procured from a rusty kettle heated over a wood fire. Any of you who have gotten your obstetrical experience in the slum districts will appreciate the difficulties to be overcome. My reasons for presenting these cases is largely a selfish one—the gain to be acquired by your criticisms and discussion.

Case I.—White, aged thirty years, primipara. No history of any previous kidney trouble. I first saw this patient after she had passed her calculated time nine days and was sent for because she believed the membranes had ruptured after some irregular and very weak pains. The history given me was negative up to four weeks previous to my seeing her when her limbs began to swell, with puffiness under the eyes. She passed large quantities of muddy urine with pain and suffered greatly from backache, headache and nervousness.

Patient's skin was dry and waxy, eyes bright and staring, heart weak, rapid, with marked accentuation of second sound, also a loud aortic murmur. The woman started and trembled at the least sound. Feet and ankles were swollen and pitted on pressure, vulva tremendously swollen, so much so that she was compelled to lie with thighs separated. Vaginal examination was difficult on this account; small outlet, os admitted finger to first joint, very rigid and unresisting; vertex presented first position, fetus living. Advised immediate delivery, to which consent was given.

With the assistance of Dr. J. W. Kennedy and a student who administered the anesthetic, manual dilatation was begun. This was found to be a very difficult procedure on account of the rigidity and lack of elasticity of the os. After about twenty minutes it was possible to make a high application of the forceps and traction was started. At this time the student informed us that the radial pulse was absent, her pupils widely dilated and the breathing jerky and hard. She was also sweating profusely. The patient's condition demanded rapid delivery, yet neither Dr. Kennedy nor myself could move the head, the os still being hard, unresisting and thick. I would say here that the strength of arms and shoulders only were used, but the anesthetist was compelled to hold the woman in bed. It was decided on account of the conditions present to incise the os, which was done by scissors, cutting the right side nearly to vaginal junction. Even after this procedure it took all the strength of one accoucheur with pressure above by the other to drag the large head through the cervix. This was accompanied by profuse bleeding and at the same time the forceps began to slip, so that they were taken off and reapplied, and the head quickly delivered.

Following the birth of the head the patient had the most profuse hemorrhage I have ever seen. The hand was quickly introduced into the uterus and placents delivered, the uterine cavity being immediately packed with sterile gauze. While this was being done the anesthetist was administering strychnine, atropine, and morphine hypodermically; one quart of normal salt solution was given by the bowel and hot bottles were placed

[1] Read before the Northwestern Medical Society of Philadelphia, March 1, 1904.

about patient, whose bed was raised at the foot. She was pulseless, had two pronounced convulsions, and was barely breathing, her condition being such that all present expected her to die. There were faint heart sounds, but no respiratory movement in the ten-pound baby, which was plunged into hot water; artificial respiration and direct mouth to mouth inflation begun; this was followed in fifteen minutes by the first respiratory effort. This baby died on the eleventh day from eclamptic convulsions.

I omitted to state that previous to administering the anesthetic, which was ether, I catheterized the patient and found the urine loaded with albumin.

The subsequent history is briefly as follows: No water passed for twenty-four hours, the catheter bringing away eight ounces of muddy fluid containing albumin. Basham's mixture, one-half-ounce t.i.d. with digitalis, gtts. 10, also a saline mixture containing iron. Vomiting was present for twelve hours, but was controlled by hot lime-water. Gauze removed in twenty-four hours, no hemorrhage following. From this time the patient made an uninterrupted recovery, the edema disappeared, urine was free from albumin and bowels moved freely. She was up on the nineteenth day.

I saw this woman ten months after her confinement. She was working hard and looking well and strong. She informed me that she does not have any backache or headache, and does all the cooking and housework without fatigue.

Remarks on Case I.—It must be remembered that I did not see this case until after the membranes had ruptured, therefore no time was allowed me for preparatory treatment. Chloroform, under the circumstances, both as to her heart lesion and the lack of experience of the anesthetist, would probably have killed the patient. That I was justified in cutting the cervix, was manifest in that more harm would have resulted had the head been dragged through by forceps; in fact, I believe this was not possible. That the free hemorrhage, normal salt solution and morphine probably saved the woman.

Case II.—Past history not obtained, other than that the patient had had seven labors, all hard, two demanding forceps, three babies being born dead. I was called to see this case after she had been in hard labor for thirty-six hours. The student informed me that there had been no progress for fourteen hours. My examination was difficult on account of large varicose veins of vulva and thighs, an extensive laceration of the perineum, which was the cause of the large recto and cystoceles, the bladder during each pain protruding through the vagina. The os was about the size of a quarter, rigid and unresisting; vertex presenting.

As this patient was having strong pains and as she did not want forceps used, I advised morphine sulph. gr. ⅛, atropine gr. 1/100 and quinine gr. 30. This was at nine in the morning. At four o'clock patient was considerably weaker, as were also the pains. Ether was administered and manual dilatation begun. In twenty minutes an effort was made to apply Simpson forceps, but the blades being too short a modified Hodge forceps was substituted. The head was engaged and brought well down and the cervix was dilating nicely when suddenly, from what cause I cannot say, the head slipped from the blades and at once receded, following which an examination showed an arm prolapsed into vagina. With considerable difficulty this was returned, podalic version undertaken and what was taken to be both feet secured. At this time it was found that the arm had again prolapsed. This had been mistaken for a leg, and was again returned. The thigh already in the canal so blocked the cervix that it also was pushed upward and both feet secured. The child, dead, weight 10½ pounds, was quickly delivered, followed by considerable hemorrhage. Normal salt solution, one quart, by enema; ergot one dram and strychnine, gr. 1/20 hypodermically were given. This patient made a speedy recovery, getting up on the twenty-first day.

I feel that should a similar case come under my care that I would undertake to deliver so soon as possible, as it must be remembered that this patient was allowed to increase her exhaustion from 9 A.M. to 4 P.M. There were no signs of fetal life on my first examination, therefore the mother's safety and comfort had only to be considered. Axis traction forceps would possibly have given quicker results, yet no delay was encounterd when once the forceps was applied, excepting the slipping of the head from the blades.

Case III.—Primipara, aged twenty-seven years, of strong build. Was called after she had been in labor twenty hours. She was up and about the room, having pains at intervals of about thirty minutes, lasting one to two minutes.

Examination.—Os dilated to size of a quarter, membranes intact, during a pain a foot could be felt, as could also the umbilical cord; the head was high up in the right flank. Abdomen flat, head felt on right, fetal heart sounds present, but feeble. Membranes were ruptured with finger during a pain. Ether administered and manual dilatation with podalic version performed without much difficulty, the head moving upward when the membranes were ruptured. I want to say here that I attempted external version without success, the head rising each time it was brought to present. The feet were secured and at once the cord prolapsed into the palm of my hand. I was unable to replace it, so quickly delivered by Mauriceau's maneuver. Child living, weight 8½ pounds.

The most interesting point in regard to this case was the finding of a fibroid about the size of a large lemon on right side of fundus. Whether it was because of this I am unable to say, but the uterus would not contract for several minutes following delivery of placenta, at the same time there was very little hemorrhage. Patient up and about on the sixteenth day.

Remarks on Case III.—This patient for five days showed symptoms of septic infection. Tem-

perature 100° to 103° F. Pulse up to 120 and a foul-smelling lochia; coated tongue, headache and chilly sensations. She received quinine gr. 8 daily, with milk punches and strychnine gr. 1-40 t.i.d. There was no perineal tear which could be seen or felt.

Case IV.—Primipara, aged thirty years, colored, of slight build. Requested to see this patient by Dr. C. H. Weber, who had been sent for on account of membranes having ruptured several hours previously. He diagnosed an arm presentation. The patient had not had any pain and informed me that she was sure the baby was dead, as heartburn had troubled her for thirty-six hours, also no movement had been felt for this time.

Examination.—Spacious vagina, head to left, no fetal heart sounds heard. Membranes ruptured, elbow presenting, head in left flank, uterus high in pelvis. Ether administered, manual dilatation and version attempted, which was very easily accomplished, but, unfortunately, with occiput posterior. I now made a high application with the Simpson forceps and procured good engagement of head. With considerable force the head, also the cervix, were brought to the vulva. I now advised taking forceps off and allowing the woman the opportunity of delivering herself, with the hope that the head would rotate anteriorly. Ether was withdrawn, quinine grs. 10 in capsule to be taken with a cup of very hot strong tea, this to be repeated in one-half hour. I saw this patient again in three hours and found her in much the same condition, with the exception that she was having good, strong pains at intervals of about five minutes. Here I would like to call your attention to a point of interest. I made an examination at 6 P. M. and found the os size of half-dollar, this was during a pain, head in same position, but cervix softer and not so inelastic. In forty minutes from this time, in answer to my question "Could she feel the head progressing?" she answered in the affirmative, the examination showing the head on the perineum. Patient turned on left side and in the next two pains head was born with occiput posterior, which was at once followed by a discharge of foul-smelling gas, without any perineal tear that could be seen or felt. The baby, weighing about nine pounds, was dead. I worked thirty-five minutes over this child without results. This patient never had a temperature over 99° F., nor pulse above 80.

Remarks on Case IV.—This was a very interesting case to me, as I was in doubt as to the advisability of not interfering at all, also as to applying forceps. My reasons for applying forceps were as follows: (1) These cases when left alone usually require some aid from our hands to complete delivery; (2) the confidence that I could engage head with forceps and deliver if necessary with slight laceration; (3) that, should spontaneous version occur, I would still have to aid in the delivery, as in premature rupture of the membranes, a faulty position rarely turns to a normal position; (4) the fetus being dead there was less likelihood of spontaneous version occurring; (5) should there be active pains, even for a short time, I am nearly convinced that a transverse presentation should not be allowed to wait in the hope of spontaneous version taking place.

I would call your attention to the statistics of Merz, as quoted by Williams, of 160 cases of rupture of the uterus. Twenty-six, or 16¼ per cent., resulted from neglected transverse positions. This alone would cause us much anxiety in waiting. Again, in these positions we find the pains are of a tetanic type, which, I believe, is the explanation of rupture in some cases. My reasons for doubting the advisability of not interfering are the following: (1) That the vertex would probably rotate anteriorily better than it could rotate with forceps; (2) that I was almost certain that the baby was dead and, therefore, felt there was less chance of the pelvic floor being injured by the woman's delivering herself; (3) that the patient would have less opportunity of acquiring any septic condition by non-interference; (4) that there was every reason to suppose she would deliver herself, having had no pains previous to my seeing her.

Case V.—White, age thirty-one years, of slight build; normal weight about 95 pounds. Patient married twelve years, six weeks following marriage pregnancy was interrupted by jolting of a Broad Street bus, recovery prompt and uneventful. Five years following became pregnant again, accompanied by severe and persistent nausea and vomiting, which was not controlled or lessened by drugs. Exhaustion, loss of weight and prostration, with inability to retain nourishment by mouth or bowl, were deemed sufficient cause for the induction of a therapeutic abortion. Following the introduction of a catheter the patient aborted, but was many weeks in regaining her strength.

Since that time she has been in fairly good health. In January, 1901, she suffered from an impaction of the bowels requiring manual removal under ether. She was in good condition until January, 1902, when she had missed one period three weeks. Nausea and vomiting appeared, the patient being unable to retain anything liquid or solid, even when the stomach was empty; mucus and bile would be ejected and retching was almost continuous. Starvation was tried without success, bowel feeding was likewise a failure, partly on account of a very sensitive and painful rectum and partly because of lack of cooperation of the patient herself, as this had been tried during her former pregnancy without success. Cocaine, camphor, carbolic acid, champagne, iced brandy, black coffee, bromides and morphine all failed, individually and in various combinations, not only to control the vomiting or nausea, but to be retained more than a few minutes. The patient was rapidly prostrated, extremely emaciated and completely exhausted. A consultation was called and a therapeutic abortion advised. This was after I had treated patient for two weeks without success, a further consultation was called

and waiting four days, with starvation and applications of silver nitrate, solid stick, to cervix was advised. This was tried without the slightest benefit, the woman becoming weaker and complaining of intense headache.

At this time, three weeks after vomiting first appeared and six weeks following conception, it was decided by all that a therapeutic abortion was necessary to save the patient. Against my opinion a No. 7 silk catheter was introduced with considerable difficulty. At the end of six hours it slipped from the uterine cavity and was again introduced, accompanied by slight bleeding. In twenty-four hours, there being no signs of uterine contraction, it was removed and a dilation and curettement advised. This I did on the following day, dilating one inch, the finger and curette bringing away about three drams of membrane and fetal structure. Douching of uterine cavity followed by iodine and a light gauze drain to fundus and later by a copious rectal injection of normal salt solution. Gauze was removed in twenty-four hours. Nausea and vomiting ceased the following day, patient was able to retain liquid nourishment and slept well. From this time she made a very satisfactory but slow recovery.

Case VI.—For the following notes I am indebted to Dr. J. C. Gittings, who asked me to see this case with him. White, age thirty years. Father died of paresis. Mother and sister well. No serious illness in the past. Engaged to be married six years. Not altogether happy, had been nervous and subject to crying spells of late. Married in October, 1902, and dreaded the idea of pregnancy. (My first question to the husband was "Does your wife want a baby?" He told me she was almost as anxious to have an heir as was he.) Last menstruation June 6, 1903. Early in August first noticed nausea, and vomiting began on August 10. In bed continuously from that date. No food of any description retained, ingluvin, cocaine, bismuth, chloral, chloretone, bromides and opium tried without success. In ten days vomiting ceased, but was succeeded by intense retching. Two days following mild delirium was noticed, pulse 100, wiry, took a very little nourishment, retching persistent. Constant retching all night; much weaker; pulse 140, temperature 101° F.

I saw the patient at this time and found her moaning and tossing, cheeks flushed, eyes staring, pulse about 150, temperature 102° F. She did not recognize anyone, was greatly emaciated and when roused would complain of pain wherever she was touched. Retching was present, with ejection of bile-stained mucus, her breath had an intensely acid odor. Pelvic examination showed a pregnancy of about ten weeks' duration; uterus in front, freely movable, os closed. Therapeutic abortion was advised. This I did without an anesthetic, but the pain caused by this procedure compelled me to stop after breaking up the membranes, and introducing a gauze drain. I felt that should uterine pains take place the woman would empty the uterus. Dr. Gittings called me in forty-eight hours, as there had been no uterine pain, but the retching had subsided, patient taking some nourishment, mental confusion and delirium unimproved. I advised emptying uterus under ether. This was done at 9 P.M., patient standing operation well. The whole uterine cavity was carefully explored with the finger and all substance removed, followed by a normal salt solution douche to fundus, and a light gauze drain. Temperature following operation, 99° F.; pulse 130.

Further Notes By Dr. Gittings.—Patient stronger, dementia more active, sleeps very little, takes some nourishment; recognizes her family. Three days following operation Dr. Burr diagnosed acute dementia, patient takes nourishment only at times, sleeps fairly well, temperature 98° F., pulse 114; mind more clouded, talks constantly except when asleep, articulation mumbling and indistinct. Uterine condition negative. Eleterium and magnesia produced free catharsis. On the eleventh day some abdominal distention noticed, constant moaning, temperature 101° F., pulse 120. In forty-eight hours from this time the patient died. Autopsy made twelve hours after death revealed marked distention of large and small intestine and stomach. Post-mortem changes advanced. Intensely foul intestinal contents, spleen friable but not enlarged, moderate parenchymatous nephritis. Uterus slightly subinvoluted but mucosa clean, no septic foci, adnexa normal. Diagnosis of death, auto-intoxication.

Dr. Gittings tells me he took charge of this case on August 24, after the patient had been ill twenty-two days.

On looking back over these few cases I have no doubt that there is much to criticize. The real points of interest and of practical value are, By what treatment or procedures, other than those used, could I have obtained better results? Cases like these are continually confronting us, and we are called in late when labor has progressed beyond the time for prophylactic measures and we are compelled to do the best that can be done at this time. Personally I have been literally thrown upon the labors occurring among the lower classes, where there is little choice as to refinement in technic—all procedures being confronted with bad-smelling, filthy and almost unlivable surroundings. I grant that this has little to do with the proper procedures which should be carried out, and it is with the wish of being criticized that I present the cases to you this evening.

Vaccine Virus in Massachusetts.—An inspection of the State's new plant for the manufacture of vaccine virus was among the events of the current quarterly meeting of the Massachusetts Association of Local Boards of Health. A forenoon was spent by many of the members at this model plant at the Bussey Institution, Forest Hills. At the new brick building, which was constructed by Harvard University and leased to the State, the work of preparing vaccine and antitoxin is carried on under the most careful supervision and with the best of modern facilities.

CHRONIC MASTITIS AND DIFFUSE FIBRO-ADENOMA OF THE BREAST.[1] [2]

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Encapsulated or localized fibro-adenomata of the breast are not uncommon, usually occurring in early life, forming small, movable, slowly growing tumors which are easily cured by extirpation. They appear to have little or no tendency to malignant changes.

A chronic induration of the breast with some enlargement, in whole or in part, is very commonly observed in women in middle life. It is sometimes seen early, even in the third decade, but rarely begins after the menopause, although it may then persist if already present.

We can recognize two pathological varieties in these changes: (1) chronic interstitial mastitis, and (2), diffuse fibro-adenoma. The typical cases of each are easily distinguishable, but the two conditions may appear in different parts of the same breast, and in some cases it may be impossible to determine whether the process found is an inflammation or a new growth. Both may closely simulate carcinoma in their clinical and physical characteristics, so that a diagnosis may be difficult. Both of them also seem to be very liable to carcinomatous degeneration, or to be followed by the development of carcinoma. Inasmuch as only a careful microscopical examination can distinguish between breasts affected by these two changes, the diagnosis between them before removal is impossible. Nor is it very important, the main necessity being to determine that actual changes sufficient to require radical treatment have taken place.

The clinical picture is as follows: In a woman in middle life (whether single or married, childless or multiparous, appears to be of no consequence) an induration takes place in one or both breasts, involving the entire gland, or forming a distinct nodule in one portion. We rarely find the rest of the breast perfectly soft and healthy, even if the superficial examination reveals only one definite nodule. It is seldom that the patient has suffered from any injury or abscess formation which might be considered a cause of the changes. When the process is localized or limited to one lobule, a more or less distinct mass is felt, moderately hard, not freely movable in the breast, but rarely attached to the skin or deep fascia. If a cyst of any size be present the mass is usually elastic, but it is often hard and sometimes of stony hardness like carcinoma. Fluctuation can seldom be demonstrated, the tension and fluid pressure within the walls of the cyst being so great. Small cysts feel like shot or beans embedded in the tissues of the breast; and the larger ones, surrounded as they often are by thick indurated walls, may exactly resemble a small carcinomatous nodule. Usually a nodular or granular induration can be felt in the rest of the breast by careful examination (pressing the gland gently against the chest while palpating with the fingers, especially at the margins), even when the patient complains only of the more evident portion or prominent tumor.

When the disease has advanced equally in all parts of the breast the entire organ feels indurated, uneven on its surface, and when grasped between the fingers gives the impression of being made up of numerous nodules. In a certain number of cases there may be some adhesion of the skin and even retraction of the nipple, in spite of the denial of Bryant and other authorities that adhesion of the skin and retraction of the nipple are ever felt except when carcinoma is present. A retraction of the nipple which is evident before operation occasionally disappears in the breast after removal, probably because of the loosening of the fibrous stroma which had drawn upon the nipple. The axillary glands are sometimes enlarged from inflammatory reaction, and they may be tender to pressure; but they are not so hard as is sometimes the case in carcinoma. As illustrating adhesion of the skin and retraction of the nipple we quote two cases from several which we have seen.

Case I.—M. B., widow; seventy-one years of age. Had noticed a lump in the breast eight months previously. No history of injury, etc. In the internal half of the breast was a smooth cyst the size of a walnut, movable in the tissues. A second mass lay near the nipple which was retracted, and the skin was slightly adherent over this mass. Very little induration was present in the breast. The breast, axillary contents, and pectoral fascia were removed at St. Luke's Hospital, October 10, 1899, and the patient has remained well since then. The microscopical examination showed a typical diffuse fibro-adenoma with cysts.

Case II.—M. W. P., sixty-five years old. Her mother had cancer of the breast. Patient has never been strong; she has borne one child. Three years ago she noticed a small swelling in the right breast the size of a hickory nut, which has been growing slowly until three months ago, when it began to grow more rapidly. Moderate pain in the breast. Patient has lost flesh and strength during the past year. In the superior external quadrant of the right breast is an irregular, hard, insensitive mass with nodular surface, the size of a hen's egg. It is movable on the deeper parts, but the skin is adherent and the nipple retracted. No glands can be felt in the axilla and the arm is not swollen. The tumor was supposed to be carcinoma, and on September 11, 1902, at St. Luke's Hospital, the breast, the subjacent sternal part of

1 This paper was read before the Medical Society of the State of New York, at its meeting in New York, October, 1901, but was not published because it was thought wise to accumulate further clinical evidence of the views presented. This has been obtained and the paper is published with no important changes in the text.

2 Received for publication, April 5, 1904.

the pectoralis major muscle and the axillary contents were removed. After removal the mass was found to measure eight cms. in diameter and to be one and one-half cms. thick, and enlarged glands were found in the axillary fat.

Microscopic Examination.—Fibrous tissue very abundant. Few acini are present and these are cystic in places. The lymph-nodes show chronic inflammatory changes. The tumor is a fibro-adenoma.

Cysts which lie very near the surface may stretch the skin, and the dark color so often present in their contents shows as a blue or purple discoloration. I have seen largely dilated veins on the surface of the breast of some cases (and in one case in the axilla) without any perceptible cause for the dilatation.

The patient is as a rule unaware of the changes which are taking place in the breast, unless a prominent single nodule or cyst has developed, for the process is often painless. In some cases, however, there may be discomfort or actual neuralgic pain. A fear of cancer is generally the cause for seeking medical advice, not the actual suffering caused by the tumor.

We have seen a subacute or even an acute infection added to the existing disease, and then there may be a discharge of pus from the nipple, or one of the cysts may suppurate, with the usual symptoms of acute mastitis. Abscess, however, is a rare complication, and the infected cyst generally discharges through the nipple or the infection is overcome by the tissues; resolution and absorption occur, and the cyst returns to its original size or even disappears.

The progress is very slow, often running for years with little change, and the outcome is a matter of dispute. Sometimes cysts of considerable size will spontaneously disappear by absorption of their contents. In only one case have we had the courage to delay operation for this result.

Case III.—M. R., single, had a rather large cystic fibro-adenoma of the left breast, and we removed the breast and axillary contents at St. Luke's Hospital, October 29, 1896. That side remained well, but she returned in June, 1900, with a tumor the size of a small hen's egg at the axillary border of the right breast, round, firm, not adherent. The rest of the breast appeared to be normal except for a very slight induration between the tumor and the nipple. In view of the perfectly limited area involved, the absence of all indications of malignancy, the evidence we had of the nature of the tumor in the other breast, and the opposition of the patient to further operation unless absolutely necessary, she was allowed to wait, being told to report later. In February, 1901, she wrote, "I find the bunch in my breast has nearly disappeared." In spite of the apparently favorable outcome, we confess that we do not even yet feel at ease as to the final result in this case.

Sometimes the whole fibrous and cystic mass undergoes atrophy, but the absorption may be much delayed, just as a fibromyomatous uterus is late in yielding to senile changes. Such cases explain some of the instances of "disappearing tumors" and of spontaneous recovery from supposed cancer. More usually the progress is continuous; and of interest in this connection is the case of M. R., widow, thirty-nine years of age, native of Ireland, who has twice in the last three years had cysts removed from the left breast. The tisues of this breast felt hard and several small nodules could be felt. One year before admission she had noticed a lump in the right breast the size of a hazel nut, which had grown at first slowly, then rapidly, to its present size, about one and one-half inches in diameter. The mass is rounded, freely movable, and the skin not adherent. Small nodules can be felt in the mass. Both nipples are normal. On September 29, 1900, the right breast and axillary contents were removed at St. Luke's Hospital, and the microscopical report was fibro-adenoma with cysts. It is quite probable that the changes in the left side will require (or have already made necessary) a similar operation.

PROGNOSIS.

In estimating the prognosis we must distinguish between the extensive and the limited cases, and also between cases with very advanced changes and those with slight alteration. In the writer's experience the grade of development is more important than its extent. The advanced cases are marked by great induration, sometimes with edges which are quite sharply defined like those of a carcinomatous tumor. A number of cysts may also be present. In such cases we believe the danger of malignant change is great, whether the whole breast is involved or only a part of the gland. When, however, the induration is slight only one or two small cysts being found, and especially if only a part of the breast is involved, there appears to be more chance of resolution and atrophy taking place. The induration varies from a slight thickening of the mammary tissues to a hardness almost equal to that of carcinoma, and constitutes the most reliable sign of the grade of pathological change and of the consequent danger.

Of a considerable number of cases illustrating the relations between these conditions, chronic mastitis and diffuse fibro-adenoma and carcinoma we present the following as of value.

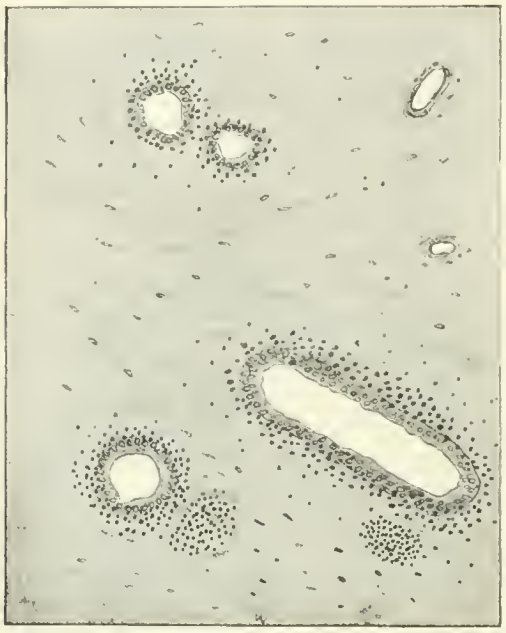
CARCINOMA WITH MASTITIS OR ADENOMA.

The first case was reported by me in the *Medical Record*, June 2, 1888, and the patient's history is so interesting that I repeat it here. Dr. C. N. Dowd showed a sketch of this tumor in a paper on fibrous tumors of the breast in the *Medical Record*, April 16, 1892.

Case IV.—A. W., thirty-nine years of age, English, entered the New York Cancer Hospital. She had been married for eighteen years, had had one child and five miscarriages since, the last one ten years ago. No history of abscess or of injury of the breast. She first noticed the lump

four months before admission, when her attention was attracted to it by a dull, aching pain. It was the size of a bean and grew slowly. For two months she had had pain in the breast and in the arm. The tumor was situated in the upper and outer quadrant of the left breast and consisted of several nodules very sensitive to pressure. There was no retraction of the nipple and no discharge. The most prominent part of the tumor was elastic but without fluctuation. The axillary glands were enlarged but not perceptibly. The other breast felt slightly indurated but there was no distinct tumor in it.

Fig. 1.



Atrophic form with only a small amount of gland tissue and a good deal of round-cell infiltration about the alveoli.—Case M. B.

On March 10, 1888, the breast was removed, also the axillary contents with enlarged glands. Dr. G. C. Freeborn, pathologist to the hospital, reported that the entire breast was composed of dense white tissue, with several cysts from a quarter to one inch in diameter. Microscopically the changes were those of chronic mastitis, but in the neighborhood of the largest cyst was found a nodule of tissue with large granular cells arranged in narrow alveoli and surrounded by a stroma of connective tissue. The lymph-nodes exhibited simple hypertrophy. This patient disappeared until June 19, 1901, when she returned with advanced cancer upon the opposite side. She had had good health in the interval, and the left side was free from tumors, with a healthy scar. At her urgent request the tumor was very thoroughly removed at the General Memorial Hospital, and, as we had expected, by the following March a hopeless recurrence took place in the thorax.

Case V.—B. N., thirty-six years old, admitted to St. Luke's Hospital, June 4, 1902; native of United States; married but never pregnant. She had accidentally discovered a lump in the breast two weeks before. In the right breast were seven distinct nodules, the two largest lying just below and just above the nipple. The latter was not retracted, but it dimpled when the upper of these two growths was drawn away. The masses were irregular in shape, firm, moving on the deeper parts, and the skin was movable over them. Some portions were harder than others, giving the impression of hard nodules in infiltrated breast tissue. The axillary glands were slightly enlarged and hard.

Fig. 2.

Adenomatous type with the production of secondary cysts. There is a moderate amount of inflammatory infiltration.—Case A. H.

The breast, axillary contents, and entire pectoralis major muscle were removed, a frozen section having demonstrated the dangerous nature of the growth, which we had previously considered benign. After removal the nodule above the nipple measured six by five by four centimeters. It was not attached to the skin or deeper parts. Microscopically it contained irregularly arranged alveoli of large oval cells with a fibrous connective tissue stroma. In the same sections were seen adenomatous acini of normal gland tissue and also some which still showed a lumen but had many layers of cells on a membrana propria. The rest of the breast showed adenomatous changes with considerable round cell infiltration around the acini. The lymph-nodes also showed carcinomatous involvement of the same type as the nodule in the breast. The patient continues well (1904), although the glands removed from the infraclavicular triangle were involved, but there is edema of the arm and hand.

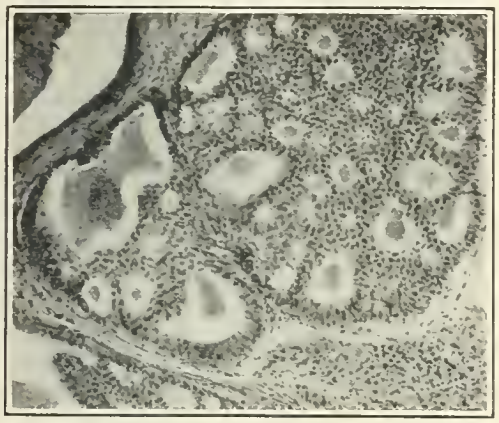
Case VI.—H. M., widow; native of United States, sixty years of age, referred to us by Dr. A. A. Smith, was operated on at her house, October 10, 1902, for a tumor in the right breast, the size of an English walnut, freely movable,

with no adhesion of the skin or retraction of the nipple, and no glands perceptible in the axilla. Examination of the tumor showed a minute nodule of gelatinous carcinoma measuring about twelve millimeters in diameter. The carcinoma was practically limited to this area and could not be found in other portions of the breast, which contained only fibroadenoma. The lymph-nodes were slightly inflamed but contained no metastases. The patient died of apoplexy without known cause, shortly after the operation.

CARCINOMA FOUND ONLY IN LYMPH-NODES.

Case VII.—M. S. R., forty-eight years old; born in United States, married; admitted to the General Memorial Hospital, April 27, 1899. The breast was large, full of hard nodular masses, not adherent. It was removed with the axillary contents and subjacent pectoralis major muscle. Involved glands were found beneath the clavicle. Microscopical examination showed only fibro-adenoma in the breast, while carcinoma was present

Fig. 3.



Highly magnified portion of Fig. 2, to show the formation of secondary cysts in the epithelial masses and also the inflammatory infiltration of adjacent connective tissue.

in the glands. This patient was seen again in September, 1900, with recurrence in the skin about the scar, and with typical central carcinoma of the other breast and involved lymph-nodes on that side.

A similar case, referred to me by Dr. C. E. Quimby, was operated upon at the patient's home, July 25, 1895. No sign of carcinoma could be found in the breast, but the glands were extensively diseased. This patient was alive and well three years after the operation.

WITH CARCINOMA OF OTHER SIDE.

Case VIII.—A. H., fifty-five years of age, married; born in United States; admitted to St. Luke's Hospital, September 9, 1902. Her sister and aunt died of cancer of the breast. Menopause one year before. Had never been pregnant. Had right breast removed five years before for cancer and no further trouble until two months ago, when a mass appeared in right armpit. She had never noticed anything wrong with the left breast and was surprised when shown the tumors there. There was a mass near the scar on the right side, another in the right axilla, and a nodule infiltrating the skin over the right scapula. At the urgent request of the patient these were removed and subsequently when an anesthetic was administered to graft the large area left by the previous operation the left breast was removed also. On the left side the mass was in the internal inferior quadrant of the breast, irregular in shape, very hard and slightly tender on pressure, movable on the deep parts, but the skin over it adherent and the nipple markedly retracted. No glands could be detected in the axilla. The diagnosis of carcinoma was made before operation, but the microscope revealed only fibro-adenoma in the breast, and slight inflammatory changes in the solitary lymph-node which was found enlarged in the axilla.

CARCINOMA APPARENTLY PRECEDED BY MASTITIS OR FIBRO-ADENOMA.

Case IX.—M. J., fifty-two years of age, born in Ireland; married; admitted to General Memorial Hospital, February 3, 1899. She had had for two years a mass in the left breast with occasional attacks of pain, especially at the menstrual period. The mass had increased slowly and was found to be the size of a hen's egg, situated in the lower external quadrant. It was not very hard and was freely movable without attachment to the skin or fascia. The nipples of both breasts were somewhat retracted. Both glands were large and the patient was fleshy. No lymph-nodes were felt in the axilla. The long duration of the tumor and the thickened condition of both breasts made the tumor seem benign, but on removal the microscope demonstrated carcinoma just beginning in a breast the seat of chronic mastitis. The lymph-nodes were normal.

Case X.—M. M., sixty-two years of age; married; native of United States; admitted to the General Memorial Hospital, February 1, 1900; had had an enlargement of the left breast for five years. Examination revealed a tumor in the upper half of the breast, slightly adherent to the skin and pectoral fascia, and some palpable glands in the axilla. After removal the microscope showed adenocarcinoma, not involving the lymph-nodes, apparently secondary to a chronic mastitis.

Case XI.—F. A. G., single, fifty years of age; native of United States; admitted to the General Memorial Hospital, May 4, 1899. Two years previously, after an attack of diphtheria, she had an "ulcer" on the right breast, which remained open for two months. Eight months ago she found a lump, the size of an English walnut, in the same breast just below the nipple, not attached to it. The tumor has now grown three times as large, increasing especially in the last six weeks, and is harder. It is in the center of the breast, the greater part lying internal to the nipple, as large as a small orange, somewhat flattened. The skin is movable over the mass, but

the nipple seems attached and is very slightly retracted. Glands can be felt in the axilla, although the patient is very stout. Adenocarcinoma was found in the breast and also a cyst holding an ounce of bloody serum. The glands were involved. Her physician, Dr. E. J. Thompson, of Hartford, informs me that she "enjoyed good health for two and a half years and then a secondary tumor developed in the crest of the left ileum. Intestinal obstruction caused death without any local recurrence."

Diagnosis.—The diagnosis of these conditions from every lesion except early carcinoma is generally easy, and the purpose of this paper is to show that it is not important to make the distinction between them and carcinoma because they are so frequently followed by the development of cancer that they can be considered practically preliminary stages of that dangerous neoplasm.

Fig. 4.

Drawing to show the combination of the inflammatory and adenomatous types in chronic mastitis.—Case M. R.

The simple congestive thickenings of separate lobes of the breast not infrequently seen during menstruation or associated with inflammatory lesions of the other genital organs, are not so hard to the touch, less distinct in outline, and much more painful to pressure. They are also intermittent and occur in younger individuals.

Retention cysts occasionally found in the breasts are distinguished by their thinner walls, and by the healthy consistency of the remainder of the organ.

The encapsulated fibro-adenomatous tumors, and the intracanalicular fibromata have their own features, such as free mobility, appearance earlier in life and usually occurrence singly in a breast otherwise healthy. The intracanalicular form may have a bloody or serous discharge from the nipple. Cysts may occur with this form, although they are not common. Sometimes the intracanalicular form occurs in breasts which also show the diffuse fibro-adenomatous changes.

The recognition of encapsulated abscesses may present almost insuperable difficulties and may mislead the most careful and experienced surgeon. On this account some authorities urge an exploratory incision in every case of tumor of the breast before removing the organ.

The signs upon which the diagnosis of malignant disease of the breast is to be made are given in the books as follows: Stony hardness of the tumor; its adhesion to the skin or fascia; retraction of the nipple; enlargement of the lymphatic glands; "pig-skin," or "orange-peel" dimpling of the skin; fixation of the breast; ulceration; metastasis and cachexia. But all except the first four signs are so late in development that their appearance indicates that radical cure by operation is impossible.

Enlargement of the lymphatic glands is also a comparatively late symptom; and in some cases it comes so late that to delay operation until its appearance would preclude all chance of a cure. It may also be a very early condition. Again, the lymph-nodes may be invaded by the new growth and yet not be sufficiently large to be palpable. The same uncertainty exists as to the date of appearance of retraction of the nipple and adhesion of the skin, both of them sometimes preceding and sometimes following the lymphatic infection.

The following cases are of interest, as showing how one may be misled by the absence of the usual symptoms of malignancy.

Case XII.—N. M., thirty-seven years of age; married; six children; native of Ireland. Patient had nursed her children and had never had an abscess of the breast. The last child was born fifteen months and weaned only one month before admission. On admission she was four months pregnant. Five months before she had a pain in the right breast and axilla, and soon after found a tumor which she thinks was as large then as now. In the right breast, below, and external to the nipple, was a hard mass the size of an English walnut, freely movable on the deeper parts, and the skin freely movable over it. The nipple was not retracted. A hard gland, the size of an almond, was felt in the axilla. The breast and pectoralis major were removed, with thorough removal of the glands in axilla and under clavicle, at St. Luke's Hospital, August 22, 1899. The following June she was well and had had her child in December. Microscopical examination proved the growth to be carcinoma.

Case XIII.—I. T., single; native of United States; thirty-seven years old. Family history negative. Eight months before admission she had noticed a small, movable lump in the right breast which had grown steadily. Three or four months ago she noticed axillary glands. No pain. A hard, irregular mass about two by three inches was felt in upper outer quadrant of the right breast; nodular on the surface. The skin was adherent; but the mass was not adherent to the fascia; and the nipple was not retracted. Cloudy serum exuded from the nipple on pressure. Several glands could be felt in the axilla. The tumor was removed with breast, pectoral muscle, a very extensive area of skin, and the lymph-nodes, at St. Luke's Hospital, January 19, 1903. The patient (Jan., 1904) is free from local recurrence,

but has paralysis just beginning with signs of tumor in the dorsal spine and an enlarged liver.

Case XIV.—S. P., forty-seven years old; married; native of the United States; admitted to the General Memorial Hospital with a tumor of the left breast near the nipple. The tumor in the lower half of the breast was a tense ovoid, smooth, fluctuating mass, four inches in diameter, not adherent to the fascia and but slightly to the skin. The nipple was retracted, but this was supposed to be due to the tension of the cyst close to it and the tumor was considered benign. It was of ten months' growth. The cyst was found to contain dark-brown fluid and the walls were not very hard. On October 16, 1899, the breast was removed and the axilla exposed by incision, but no enlarged nodes could be felt, therefore no dissection was made. The tumor proved to contain carcinoma. On June 16, 1900, the patient having returned to the hospital with an axillary mass the size of an English walnut, which she first noticed three months previously, the axillary contents were thoroughly removed and found to contain cystic carcinoma exactly like the tumor in the breast.

Case XV.—M. R., thirty-two years old; native of the United States; married; admitted to St. Luke's Hospital, September 4, 1903. She had had seven children, the last born nine months previously and not nursed. Three months before she had accidentally noticed a hard lump in the right breast the size of a marble, which had gradually increased in size and had recently caused pain. One month before admission she had noticed a lump in the right axilla which had enlarged and grown tender. The right breast was pendulous and large, and contained a tense, fluctuating, smooth-walled mass, globular in shape and about two inches in diameter. Near the anterior wall of the axilla was a small mass resembling an enlarged lymph node. The rest of the breast felt healthy. The tumor was not tender to pressure; not attached to the deeper parts or to the skin, and the nipple was not retracted. An exploratory incision opened the cyst and discharged about three ounces of slightly cloudy yellow serum. After evacuation no induration could be felt even with one finger in the cyst and counterpressure outside, the tissues feeling perfectly soft and normal. The interior of the cyst seemed perfectly smooth. A small fragment of the cyst wall was removed for microscopical examination and showed carcinoma. On September 19, the breast and sternal part of the greater pectoral muscle were removed and primary union obtained. Examination of the specimen showed no new growth anywhere in the breast except in the wall of the cyst, which was formed of epithelial cells in a carcinomatous arrangement with little stroma. The axillary fat contained a mass of carcinoma, which gave no sign of having originated in the lmph-node, measuring 3 x 2½ x 2½ cm. Only one node was found and this was not involved.

Many cases of diffuse fibro-adenoma and of chronic mastitis with cyst formation present small densely hard tumors, and it is clear that up to the present there is no absolutely reliable sign to distinguish between these conditions and carcinoma before one of the other cardinal signs of malignancy, such as adhesion of the skin, retraction of the nipple, or involvement of the lymphatics, makes its appearance. We all know too, well the danger of allowing a malignant tumor to remain even a week after its discovery, especially when we consider that the tumor has already attained some bulk and must have been growing for weeks or months before it was detected. It is therefore impossible for the surgeon to wait for the development of these reliable signs and action must be taken at once.

On the other hand, the masses in the breast produced by chronic mastitis and diffuse fibro-adenoma in certain cases present some adhesion of the skin to the surface of the tumor and some retraction of the nipple, so that the simulation of malignant disease may be complete. We must therefore conclude that errors are possible in both directions. Add to this the fact that malignant changes are quite frequent in these indurated breasts, as can be demonstrated by careful microscopical search, while the patch in which the change begins may be so small that it cannot be recognized except by the microscope and may escape careful search by the pathologist, even when he knows that it must be present because he has already found carcinomatous changes in the lymphatic glands.

There is only one legitimate decision for the surgeon to reach in such conditions; namely, that a breast which presents changes so closely simulating the clinical picture of cancer, and possibly containing a small area of carcinomatous change, must be treated like a breast in which an early carcinoma has been demonstrated. The diagnosis between these conditions, and the question as to the probable resolution of these inflammatory changes, or the length of time before carcinoma will develop, are all interesting scientifically; but to test them by awaiting development is playing with human life. The individual patient cannot afford to make that scientific experiment.

Treatment.—The knowledge of these facts must determine our choice of treatment. We can separate these cases into three classes: (1) Moderate induration, limited or general; (2) marked induration, limited to one-quarter of the breast or less; (3) marked induration, general.

First Class.—We need not remove every breast which has a small mass of moderate hardness, or in which the tissues of the entire breast are slightly indurated. A slight induration is very common in women from forty to fifty years of age. These are cases which can be left for time to produce atrophy, the patient meanwhile being kept under regular observation. Nor should we excise every cyst which is of small size, thin-walled and soft, in a normal breast. The cysts can be treated, it is said, by aspiration and pressure, but in my personal experience this method has failed. When-

ever there is indurated tissue in the neighborhood of the cyst or elsewhere in the breast, the accumulation of fluid can be set aside as an unimportant feature of the general disease of the breast tissue. The induration is the real disease, and the case should be treated according to the indications to be discussed below. The determining factor in the treatment of these cases is the degree and the extent of the pathological change as shown by the accompanying induration.

Second Class.—When a small mass is found in the breast showing the characteristic nodular induration, its removal should be urged. Consent should be obtained beforehand for the removal of the entire mamma if the surgeon thinks there is a possibility of discovering positive evidence of malignancy during the operation, or the patient should be made to understand that the operation is preliminary to a careful microscopical examination of the tumor, and that an immediate radical operation may be required if the character of the tumor should be proved by this examination to be dangerous. Banks asserts that the gross appearance of the tumor after section by the surgeon is more reliable than a microscopical examination, but few will agree with him. The writer has frequently made guesses founded upon these appearances and has been wrong as often as right, so that he is unwilling to express an opinion without the assistance of a frozen section which can be made at once before the wound is closed. At the same time it must be remembered that frozen sections are not absolutely reliable and more than once sections have been obtained in our cases from cysto-adenoma and even from a typical encapsulated fibro-adenoma which closely resembled in appearance malignant disease. The thickness of the sections and the indifferent staining account for this uncertainty. This removal of limited masses of the breast must be restricted to tumors involving less than one quadrant of the gland, for if more than this be removed the portion left behind is of no cosmetic or even sentimental advantage to the patient. Some surgeons go so far as to advise the saving of the nipple even when the removal of the entire gland is necessary in non-malignant disease; but the writer's patients appear to be entirely indifferent as to the leaving of some small fragment of the breast,—in fact, most of them have themselves urged the removal of the entire organ as soon as it was made clear to them that a considerable portion must be taken away. Having the nipple does not add to the esthetic appearance and it is dangerous to leave any epithelial structures.

Third Class.—If the induration involves so much of the breast as to leave less than three-quarters of the gland after excision of the diseased portion with a sufficient zone (half an inch to one inch wide) of the surrounding healthy tissues, the entire breast should be removed and the pectoral fascia dissected off with it and the axillary contents removed as well. These latter precautions the writer believes to be wise, for they do not add perceptibly to the risk of the operation when properly performed, and in more than one case, as already mentioned, carcinomatous changes have been found in the glands when none could be discovered in the breast.

While we can lay down these general rules, every case should be carefully studied before deciding upon the method of treatment. Many women particularly dread the terrible malady of cancer and are rendered so nervous by the knowledge that anything exists in the breast in the shape of a tumor, that removal of the organ is the only sure method of restoring their happiness; and we cannot even conscientiously advise waiting, because if the breast already shows pathological changes, no surgeon can honestly assure the patient that carcinoma has not begun. As we remove the suspicious appendix, so should we remove the suspicious breast, even if we feel tolerably certain that dangerous changes have not yet taken place in the suspected organ. The patient has a right to demand this action as a method of life insurance.

THE PATHOLOGICAL ANATOMY OF TUMORS.

BY F. C. WOOD.

The name of "maladie cystique" was given by Reclus to a peculiar chronic condition of the breast, and he also pointed out the fact that the tumors are usually bilateral and closely related to the presence in the breast of a considerable amount of chronic inflammation with the production of dense fibrous tissue. The question was still further investigated by a number of French surgeons, chief among them being Delbet. At first Reclus and others claimed that the development of carcinoma generally followed these changes. The present trend of feeling among this group of observers is that the disease is not progressive, but is self-limited, and that the cysts disappear by absorption of their contents while the glandular areas atrophy. They do not consider that carcinomatous changes are as likely to occur as was once supposed.

In the year 1890, Schimmelbusch collected and described a series of cases of what he called cystadenoma of the breast, and pointed out that carcinomatous changes were to be found in a certain proportion of breasts thus affected. His description has given rise to much discussion as to the exact interpretation of the anatomical findings in these cases, and this discussion has brought to light the fact that there are a number of conditions in the female mamma which are closely related to the change described by Schimmelbusch, and yet possess a distinctly inflammatory character which has been especially emphasized by König.

The growth described by Schimmelbusch forms a tumor arising in the breasts of married or unmarried women, chiefly those who have had no children, and consists of a fibrous tissue growth containing numerous cysts with thick gelatinous contents. The formation of the cysts is antedated by an abundant growth of the epithelium of the acini of the breast tissue, which often fills the

entire lumen of the acinus. This epithelium then degenerates, and the cavity remaining fills with the debris of the cells and with the secretion of the remaining healthy cells. (Fig. 4, a.) The connective tissue does not show any marked inflammatory change and the tumor does not become adherent to the surrounding tissues and it is almost always bilateral. In most cases there is an increase of the interstitial connective tissue, with no definite capsule or boundary to the growth, so that the name diffuse fibroadenoma appears appropriate. In some cases there is an abundant round cell infiltration of the connective tissue, and the adenomatous growth is less marked although cysts are frequent. For these cases we may use the term chronic interstitial mastitis. (Fig. 1.) But there is no sharp distinction to be drawn between the two and one is often in doubt in which group to place certain intermediate varieties of tumor.

The anatomical changes found in these cases may be designated as chronic mastitis or diffuse fibro-adenoma, and are extremely variable, depending upon whether the glandular substance or the connective tissue is the most affected.

The lesions differ distinctly from those found in simple adenoma of the breast and in the special forms of fibroadenoma known as intracanalicular and pericanalicular fibroma, which rarely become carcinomatous and are of interest to the surgeon chiefly because of the physical discomfort which they cause. The breasts show in these cases either a simple increase in the amount of glandular and connective tissue sufficient to form a tumor or a marked increase in the periglandular connective tissue, often accompanied by diffuse mucous degeneration. The masses so formed are as a rule sharply delimited from the remainder of the breast tissue.

The changes which characterize the conditions known as interstitial chronic mastitis or diffuse fibroadenoma are of very different character. The breast may be largely filled by the growth which may contain harder or softer areas, the latter being the cystic portions, or as is more frequently the case there may be many large and small hard nodules scattered through the gland, connected by bands of connective tissue, or the tumor may be confined to a single irregular and ill-defined mass which is but slightly movable. Rarely, however, are there symmetrical oval tumors which are freely movable in the breast substance. These cases are the ones which show the adenomatous type in distinction to the chronic inflammatory. The nipple is occasionally retracted.

Three general types of growths may be observed:

1. Tumors in which the breast has recently been the seat of a subacute inflammation entering the lacteal ducts and involving the periglandular connective tissue. The process is not the same as is seen in acute puerperal mastitis with the formation of abscesses. In chronic mastitis abscesses are rarely developed as the pus, if formed, may discharge through the nipple; the process is rather a low grade inflammation with some necrosis of the periglandular connective tissue, desquamation of the glandular epithelium, and the formation of cysts. These cysts are apparently not formed by the retention of the breast secretion caused by the blocking up of the lacteal ducts; but are due to the inflammation about the glandular structures and inflammatory softening and dilatation, such as can be seen in the early stages of the formation of a bronchiectactic cavity in the lung. The cysts and the dilated ducts are often filled with debris, occasionally with milk and colostrum corpuscles. The general connective tissue of the breast is infiltrated with small collections of leucocytes and the number of connective tissue cells is increased. These are the cases which König has properly designated chronic mastitis, and are illustrated in Case I.

2. The second type of cases are those which are more distinctly of an adenomatous type and are those described by Schimmelbusch and Reclus. Two varieties may be distinguished microscopically,—one in which the glandular acini are filled with masses of cells which have grown out from the walls of the gland; the other, in which the lumen of the acini or the cyst is filled with a papillary outgrowth which simulates an adenoma. The centers of the cell masses may also soften down and form cysts. Cysts may also occur as simple dilatation cavities, having then a lining of flattened epithelium and containing a thin milky or a thin or thick serous fluid of a yellow or brown color, as in case Czarmoniska. The contents may become inspissated and form the so-called butter cysts of the breast. The connective tissue stroma in these tumors varies greatly, even in different portions of the same breast. There may be a large amount of interstitial tissue, either dense in character or soft and infiltrated with a few leucocytes; or there may be very little connective tissue and the tumor may be entirely made up of epithelial structures and cysts. The tumors frequently present a very different appearance in different portions of the growth. One section may show only dense connective tissue with a few normal gland tubules, while a section from another portion of the same breast may be composed mainly of cysts and enormously dilated glands with the lumina filled with cells from the proliferation of the walls. When the gland tubules are actively proliferating, there is as a rule a marked infiltration of the surrounding tissues with leucocytes. Most of the tumors may be included in this category.

3. *Transition Cases with Malignant Changes.*—The breast may contain a small perfectly mobile tumor with all the clinical and gross anatomical appearances of an adenoma; carcinomatous changes may, however, have taken place in some portion of the tumor and invasion of the axillary lymph nodes already begun. Only a minute portion of the tissues may be so involved and the greatest patience is required to find the carcinomatous area which has furnished the cells for the invasion of the lymph-nodes. This is one

of the dangers of relying on the examination of a small section of such a tumor removed for diagnosis, for the remaining portions of the breast in these cases may show the same adenomatous growth in the gland tubules as in those cases in which no carcinoma can be demonstrated.

The morphological distinctions between the adenomatous forms with proliferation of the epithelium of the acini and invasion of the surrounding connective tissue by the cells of the new growth, and the cases in which a true carcinomatous change has taken place, are not always very sharp. It is this fact which led Brissaud to state that the adenomatous type described by Reclus was malignant in its nature, and to draw no distinctions between those cases in which there was simply a proliferation of the epithelium invading the surrounding connective tissue and those in which an actual change to carcinoma had taken place.

The most important point, and one which is absolutely diagnostic, is the invasion of the lymph nodes in the axilla. This process takes place very early in the dense fibrous tumors with small cells in distinction to the soft tumors with large cells. The difference seems to be entirely a mechanical one and to depend upon the ease with which the cells are carried by the lymph current.

The second point is the invasion of the lymph channels of the breast by the cells of the carcinoma. This invasion can be easily distinguished from cross sections of the acini by the presence on the walls of the lymph space of the layer of endothelium, which normally lines it. There is also no basement membrane such as is seen in the connective tissue surrounding an acinus.

The third point is in the morphology and arrangement of the cells themselves. The cells of a carcinoma are larger than those of a proliferating gland, the nuclei are larger, the chromatin network is better marked, and division figures can usually be found if the preparation is carefully searched. The cells of the inflamed and hyperplastic glands sometimes extend beyond the line of the basement membrane, but only for a short distance; while in a carcinoma the cells are generally not seen in direct contact with glandular structures, but widely scattered throughout the lymph channels of the connective tissue.

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HEREDITARY SYPHILIS.[1]

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An accepted definition of hereditary syphilis is that it is a syphilis transmitted at the time of conception, either through infected semen of the father or an infected ovum of the mother, or through both. The recognition and treatment of this condition are very important from the standpoint of the physician, as much can be done in the way of prevention and treatment, and from the standpoint of the moralist, the sympathy which is called forth by the innocent victim of its progenitors' errors, stimulates us to persevere in our utmost endeavors to help these unfortunate beings.

Usually where syphilis is inherited, it is the eldest child that suffers most, and often it is the first-born only which is affected (this, of course, when the disease is not contracted by a parent after one or more children have been born), showing the lessened tendency to transmit the disease as time goes on. This is a natural tendency and is marked, even in the cases which have not been subjected to treatment.

Hereditary syphilis differs from the acquired form in being constitutional from the first. There is no chancre, nor in the course of its development can the manifestations of the disease be classed under distinct periods for while they may correspond in type to secondary or tertiary lesions, a chronological order, such as in acquired syphilis, is not present. For the first two years or so after birth secondary and tertiary manifestations appear side by side. Later and about the time of puberty, if lesions appear, they belong exclusively to the tertiary type. The local lesions of hereditar syphilis do not differ in themselves from those of the acquired form. The main point of difference between the two lies in the profound alteration which the former impresses on the general nutrition and development—as, for instance, a well-marked case, with its accompanying, always intractable and very often fatal marasmus, or again, in the acute inflammation of the epiphyses and later chronic osteoperiostitis, producing often marked and typical deformity, as, for example, the sabre-blade deformity of the tibia and the nodes upon the bones of the cranium.

In making a diagnosis of hereditary syphilis, the family history is, of course, a most important point, and with this we will have many and varied symptoms and conditions to consider, as is the way with syphilis whenever it occur and however it may be contracted. To enumerate all the symptoms which may appear in cases of this disease would lead us to consider probably every organ and tissue of the body, and would consume more time than is at my disposal.

[1] Read before the North Branch of the Philadelphia County Medical Society, October 8, 1903.

In a case of average severity the child may seem in perfect health at birth, the first definite symptoms making their appearance about six weeks later—these commonly consist of coryza and a quite characteristic erythematous (or, in some cases, papular) rash; the favorite localities being about the anus, genitals, thighs or forehead. The secretion from the nose forms scabs and excoriations, the corners of the mouth become sore and perhaps ulcerated, healing slowly and leaving scars which are carried through life. The mucous membrane of the larynx may become affected, producing a characteristic hoarse cry, and unless the infection is very mild, there is marked anemia and wasting, the skin appearing shriveled and shrunken. The effects of the poison seem very depressing, the digestive organs are interfered with; the infant wastes away and in many cases dies. The mortality is high in those which show a marked syphilitic infection, while, on the other hand, those who suffer in a less severe form, and are early subjected to treatment, gain flesh and improve rapidly, but later, or about the time of puberty, symptoms which correspond to the tertiaries are apt to appear in a more or less severe form.

When the fetus has received a large or virulent dose of the syphilitic poison, or for some reason in the embryonic state, it is more susceptible to the infection, the infant, if born alive, survives but a short time—a few minutes, or perhaps a few days. And so we might cover the entire gamut, from the mildest taint, with only ill-defined and perhaps very late symptoms to the opposite extreme of the malignant form, where the patient is overwhelmed with the poison and cannot survive.

Hutchinson says the diagnostic recognition of hereditary syphilis is a matter of much difficulty in all stages of the malady, and the belief that it is easy leads to constant errors. He says in making the diagnosis it is necessary to have a combination, in a marked form, of snuffles, a ham-colored eruption on certain parts of the body, a general wasting, senile physiognomy, etc., and that none of these alone is of much importance.

While we know this is true in respect to a positive diagnosis, and also that every child which has coryza or a skin eruption is not syphilitic, still I think we are inclined, and properly so, to look with suspicion on any child which has a positive family history in this respect, and which shows even few and rather ill-defined symptoms, and to give them the benefit of antisyphilitic treatment.

As to the subject of treatment, it does not differ in principle from that of acquired spyhilis, but in practice there are some elements which we have not to deal with in adults:

1. *The Matter of Prophylaxis.*—It is well known that the administration of mercurials to the tainted mother while pregnant will very much reduce the chances of the offspring being affected.

2. *The Question of Nutrition.*—This is a very important consideration. It is essential that the diet of these infants be looked after with the greatest care; that they be breast fed, if the mother is able to furnish good milk, and if this is impossible, that their food be adapted with the greatest nicety, and that hygienic rules be observed with the highest possible exactness.

3. *The Manner of Administering Specific Treatment.*—It is unnecessary, and, I think, unwise, to give mercury or iodides unless some symptoms appear. In the early stages, when there are symptoms, mercury should be given by inunction, bichloride baths, or by the mouth, in the form of gray powder, calomel, etc., though I have found the mercury and chalk to be effective and the best tolerated. Later, in what corresponds to the tertiary stage, potassium iodide, mixed treatment, etc., must be resorted to.

I wish to report briefly a case which recently came under my observation, which seems to illustrate a few points in the discussion of inherited syphilis: (1) There were no early manifestations of the disease, only a rather late development of tertiary lesions; (2) the large doses of potassium iodide, which were taken without any difficulty, and (3) the happy effect of medication.

William C., aged six years and nine months; father and mother living and well at present; two brothers, thirteen and twelve, and one sister four years of age. According to the mother's statement, she contracted syphilis from her husband ten years ago; had the usual secondary symptoms and was treated for the same, taking medicine for eighteen months. No marked symptoms since. She had three miscarriages following date of infection, then gave birth to this boy, who seemed in perfect health when born. He was breast-fed for one year, and, except for an occasional cold or some slight ailment, continued well until about January of this year (1903), when he was six years old. He was brought to St. Joseph's Hospital March 10, 1903, and at this time showed a distinct swelling over the middle metacarpal bone of the right hand. This swelling had been noticed about three months and at the time of the examination was seen to be inflammatory in nature, the surrounding skin being shiny, tense and red. The mass pitted on pressure, and there was well-marked fluctuation. There was also a fluctuating gummy mass, non-inflammatory in character, occupying the position of the lower portion of the biceps tendon of the right leg, and seemed to be within the sheath of the tendon. This swelling was painless; the one on the hand was somewhat painful on manipulation. The patient also complained of fugitive pains in the leg and head.

Under an anesthetic the diseased hand was incised and curetted. With the probe necrosed bone could easily be felt, and the probe could be entered into the canal of the metacarpal bone. The wound was given general antiseptic treatment and the boy received alternately, inunctions of mercurial ointment and internally bichloride, gr. 1-24 and KI. gr. v. t.i.d. The potassium iodide was increased ten

grains a week until he was taking 50 grains t.i.d., and he has continued this dose ever since with no signs of iodism and entire disappearance of all symptoms for which he came under treatment. The hand is entirely healed and, except for a little stiffness, he has perfect use of it.

DIFFICULT CASES OF INFANT FEEDING.[1] [2]

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The problem of the artificially-fed baby is usually a complex one. There is no branch of medicine or surgery which is more difficult of comprehension or taxes the resources of the physician more than does the rational feeding of an infant, especially if he comes across that infant after a few weeks or months of improper feeding.

Thinking that perhaps a description of a few of the most common cases of difficult infant feeding which have occurred in my own practice during the past few years might be of interest to the Society, I am induced to write the following paper.

There is all the difference in the world between the way of bringing up an infant at the present time and that of twenty years ago. We have all heard the views expressed by some fond grandmother of the *terrible* way in which babies are brought up nowadays. It is nothing like the good old-fashioned method! This is true, and it is a matter for congratulation that there have been marked changes in the care and feeding of infants from the days of long ago. The dirty-mouthed baby, the foul nipple, the microbic nursing bottle incubators and the cholera infantum milk have all been relegated to the realms of the past. But, surely, notwithstanding the rapid advances made in infant-feeding, the general practitioner is bothered, and bothered as nothing else can bother him, regarding some little patient who has been improperly fed. What, then, are these cases?

A baby is brought into the world, a healthy, normal baby, is started on breast milk, and for a time all goes well. Then the mother's milk gives out, or the mother decides that it would be much less trouble to let her nursemaid attend to the baby's feeding; or, because her infant vomits, he is put on the bottle, the physician never being consulted at all. The average New York mother of the higher class who is perplexed by the servant question, by social duties and strained domestic relations, makes a very poor *cow*. The pace of living is becoming faster and faster, and where our nursing mothers will be in ten years' time, if this hurried, nervous state of living exists, I must frankly confess, I cannot tell. In 99 out of 100 cases, when an infant who has been hitherto unaccustomed to cow's milk, is put for the first time upon that diet, he is given milk far too strong for him. He may grow fat and seem to do well on this heavy food, but he is getting carbohydrates, fats, and proteids enough for a baby of six months; his flesh is flabby and not like the firm, pink flesh of a healthy baby. An early excess of fats and carbohydrates diminishes proteid metabolism, and the crash finally comes. Baby's appetite wanes, he loses weight, attacks of constipation and diarrhea make themselves manifest, and a chronic gastro-enteritis is set up.

Then what occurs? The mother, or nurse, thinks that, as cow's milk does not agree with the baby, other substitutes will be borne better. Condensed milk is now tried. Just as she put the baby on too strong cow's milk, so now she puts the baby on too weak condensed milk. The condensed milk is thrown aside, as it, too, does not agree with her baby. Then begins a continual dietary change, and the poor infant is put through a lightning change of all the patent foods on the market—each with the same result that, when first begun, all seems to go well for a day or so and then the baby goes back to a state worse than at first. As a dernier résort the physician is summoned! He finds himself facing a hard proposition. Here he has a baby with practically a ruined digestion—a proteid digestion practically nil, gastro-enteritis, flabby muscles, slight fever at times, loss of weight, and an alabaster skin. What, then, should be done with a child in this condition? It has been my practice when confronted with a case like this to tell the mother that her baby has been improperly fed and overfed from birth, that it will take a few weeks—in some cases even longer—to get him started correctly and that, unless she places her baby under the care of a trained nurse or else follows directions to the letter, I will have absolutely nothing to do with the case. This is essential in my mind for the proper feeding of such an infant. I have often, in similar cases, where the parents could not afford a trained nurse, been told that the mother did just as I directed, but I knew she did not, as results proved.

Such an infant should have his stomach washed out daily with warm water, especially if there is much vomiting. It is astounding, in this condition, to see the mucus that can be washed away from a baby's stomach. Stomach washing is done by means of a small, soft rubber catheter (20 F.); a connecting tube of rubber and a glass funnel. Also give the baby's bowels a good flushing out, with a decinormal salt solution; use a long, soft-rubber rectal tube. It has been my plan to start these babies on a weak cereal water, such as barley water, for a few days, until their digestive apparatus is in a better condition to assimilate food.

The baby should be weighed every day at the same time, and should be weighed naked. After a few days of this barley water diet, add *one teaspoonful* of cow's milk to one of the bottles of barley water and note the result. Watch the stools for curds. If many curds are present and

1 Read before the Riverside Practitioners' Society.

2 Received for publication April 19, 1904.

if there is much colic, put the baby back on barley water for a little longer. If all goes well, add one teaspoonful of cow's milk to every feeding; then, after two days, add two teaspoonfuls of cow's milk to every feeding, and so on gradually get the baby back to a feeding of which he can take care. Never feed a sick child on a special formula; formulas are for healthy children.

Oftentimes a baby of this class will not be able to assimilate even the smallest amount of proteid, and I do not think that, if a baby has a weak proteid digestion, the addition of barley water to the milk will cause him to assimilate more proteids. This addition of barley water may more finely divide the curd, but if the child can only digest so much proteid, that is all he can digest, no matter in what form or dilution it is given to him. I have seen cases where a baby could not digest cow's milk at all, no matter in what dilution. These milk idiosyncracies are not at all uncommon. Again, we may have a baby with a ruined digestion, and when we proceed to feed this baby with proper food, he will not take it. Let him starve, then, until he does eat, do you say? If you do this, he certainly *will* starve. How are you going to feed this baby and make him drink his food? The food is given to him by gavage. The method is simple and when, after a few times, the baby finds that his stomach is filled whether he likes it or not, he will prefer drinking his meals to having a rubber tube pushed down his throat. Vomiting babies who will retain no food when it is given them by the bottle do well and retain their food when it is given them by means of gavage. A baby may be too weak to take his food in any other way. I have seen many cases of feeble digestion, where a teaspoonful of unsweetened condensed milk to three ounces of water or barley water was assimilated, when no other form of nourishment would be borne.

In some cases feeble digestion begins at birth, but usually the difficult cases which we are called upon to treat are those of a digestion ruined by wrong feeding. Improper nursing from the breast is a great factor in the causation of malnutrition. The mother's milk becomes poor from indiscreet diet, etc., or disease, and, notwithstanding this poor milk, the baby is still fed upon the breast until he breaks down. Breast milk should be frequently analyzed in order to see whether it contains the proper amount of nutritional elements, namely, fat, sugar and proteids.

Other cases of malnutrition are caused by acute illness, such as pneumonia, whooping-cough and influenza. In all cases the problem is the same: to adjust the food to an infant whose powers of digestion and assimilation are very feeble and easily disturbed. We often see babies who are chronic vomiters and are made so by their mothers or nurses jouncing or handling them continually after they have been fed. These babies stop vomiting at once when placed in the hospital.

Proteids are the ingredients which usually cause trouble in artificially-fed babies, and, as I said before, the majority of babies are started on food that is far too rich in proteids. A certain amount of science in the feeding of infants is to be encouraged, but a thoroughly scientifically-fed baby, who has all his food sterilized and put up by men wearing white caps and operating gowns and who are *supposed* to mix fats, proteids and sugar with accuracy (?)—I say that for these *aseptic* babies I have absolutely no use whatever. In a properly constructed home there is surely money enough to buy two quart bottles of eight-cent good milk, a 16-ounce graduate and a few 8-ounce nursing bottles. With these articles and a little time on the part of the mother or nurse, baby's feedings can be made at home with ease and comfort. On the other hand, there are times when laboratory milk is not only useful but of great importance. I speak of cases of improper digestion in babies who of needs must travel, or are at times isolated from a source of good milk supply, or who are in a disease-infected district. In these cases laboratory milk has worked wonders.

Condensed milk is one of the worst curses upon a community of babies. "What is easier," says the young mother, "than by following the directions on a can of condensed milk to rear a big, fat, healthy child? It is absolutely no work at all." A sixteen-cent can of condensed milk in the ice box, or, more generally, in the *bathroom*, a spoon and some water, that is all. Baby, for a time, gets big and fat. He beats all the babies in the block in weight. We have all seen these square-headed, feeble-boned, open-fontanelled, big, fat, rickety babies with a rosary on their ribs that can be seen across the room. "It was no bother to bring *him* up," says the mother. No, her bother has *just begun*.

So much against condensed milk. Now, a word or two for it. It is unquestionably one of the best foods to switch off on if baby's stomach becomes a little upset, as it were, from too much proteid. For a short trip, or in a district where good cow's milk is not procurable, condensed milk answers admirably. Among the poor in a great city in summer many babies would die were it not for condensed milk. The mothers have no means to keep cow's milk, and condensed milk tides many a tenement house baby over a critical heated period.

In closing, let me cite a case which is picked at random from many that I have seen during the past few years. It simply illustrates the average case of disordered digestion from the usual cause, namely, improper feeding.

Case.—A. B., six months old; breast-fed for one month from birth; weight at birth, eight pounds. Both parents healthy. The baby, without the advice of the attending physician, and upon the advice of a nursemaid, was taken from the breast for fear that "he would drain the mother's strength," and was placed upon a mixture of almost pure cow's milk. The baby lost weight, cried at night, had attacks of constipa-

tion and diarrhea and regurgitated his food. The nurse now told the mother that the cow's milk was too strong for the baby and that he must be put on prepared foods. He seemed to improve for a week or two, but went back to his disturbed state soon afterward. One food after another was tried, and all with the same result. The family now thought it high time to consult a physician. The baby presented the true characteristics of an overfed baby. His stomach was washed out, his rectum and colon were flushed, he was put on barley water with a gradual addition of milk, as I have heretofore outlined, and in three weeks one would hardly have known the baby. He has since been well and is now two years old.

What conclusions may we draw, then, from this essay? I think they are (1) The artificial feeding of babies is not the simple and easy problem which some of our lay friends seem to regard it. The physician should be consulted frequently in every case where a baby is fed by either breast or bottle. Every baby is a law unto himself and should be fed as an individual; (2) the general public should be taught that they should not and cannot feed the rising generation of infants on "any old thing," and in any way that they choose. A baby's food should not be experimented with by the laity. It is the baby's life, and parents have no right to trifle with it.

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TRANSITION OF OBSESSIONS TO DELUSIONS; WITH REPORT OF TWO CASES.[1] [2]

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In physiological life the following fact is very frequently observed: an idea, a sentence, a word or an image may unexpectedly invade our mind and obstinately persist. It is sufficient, however, to exercise our will to a certain extent and make this phenomenon disappear without leaving any trace. This is a *physiological obsession.*

Should this condition persist in spite of the will, or should the will be unable to vanquish the irresistible condition in spite of repeated efforts, the phenomenon will become morbid and we are then in presence of a *pathological obsession.* Here the individual is conscious of the feebleness of his will, he realizes his inability to resist this morbid tendency and his will power is annihilated by the unknown force called obsession. Should he attempt to oppose this force and struggle, considerable efforts will be required of him, emotion and anxiety will set in and he will suffer.

We therefore see that between the physiological and pathological obsessions there is only a question of degree, but there is a certain condition which must be absolutely present for the development of the pathological form of obsessions, namely a special mental make-up which forms the basis of the so-called degenerates. Only individuals with an insufficient mentality, only those whose will-power is compromised or lost, those who show hesitation, timidity or want of determination in every sphere of life, those who are unable to adapt themselves to circumstances, those who become accustomed early in life to introspection and to analyzing their own psychic life, those who show a dissociation of the personality,—these are the individuals of whom Magnan speaks as affected with cerebrospinal ataxia, ataxia of thoughts, sentiments and will, ataxia of the psychomotor functions. The tendency to obsessions forms an inseparable element in these individuals, it is born with them and it remains for a long time in a latent stage. Although the attacks of obsessions are only episodes in the life of the degenerates, nevertheless by virtue of the fact that they are intimately associated with their psychic make-up, one cannot avoid considering them as psychic stigmata of the degenerates. These morbid psychic phenomena, showing some mental disturbance, are nevertheless not true insanities. They are only the expression of a faulty mental equilibrium and their evolution is such that they are constantly threatened with a break. It is, therefore, evident that insanities should be expected in individuals presenting morbid obsessions. We often see cases of mental affections, in which a previous history of various neuroses and obsessions can be traced.[1]

A close analysis of obsessions will show that their immediate cause is the lack of control of the will. The patient preserves his reasoning power, he is conscious of the want of harmony between the will and the inability to remedy the condition. Should this condition persist for a long time and should the patient whose psychic make-up is unstable begin to analyze the obsessions, he is apt to lose all power of critical judgment, become passive, cease to struggle against the overwhelming obsessions; his consciousness, which helped him to struggle, becomes absorbed, and he then accepts the condition as an inevitable phenomenon, finding complete justification for it and ascribing it to some tangible cause. The patient then reaches the final step of the pathological evolution of the obsessions and we are in presence of a genuine delusion.

We mentioned above that there is only a difference in degree between a physiological and pathological obsession. The same difference likewise exists between a pathological obsession and a delusion which developed from an obsession. The analogy which exists between obsessions in general and systematized delusions appeared so striking to Arndt, Mendel and Morselli that with good reason they gave the name of *"rudimentary paranoia"* to certain forms of obsessions.

Cases of insanity with previous obsessions are not at all rare, that delusions may develop in addition to obsessions is also known and that a cer-

1 Read before the Philadelphia Neurological Society, April 26 1904.

2 Received for publication April 30, 1904.

1 See "A Note of Psychoses of Early Puberty." A. Gordon, *Phila. Med. Jour.*, Sept. 6, 1902.

tain obsession by a process of progressive development will gradually become a distinct and well-defined delusion is by no means so unusual as some alienists pretend. According to Séglas, who became interested in the subject in 1889, the transformation of obsessions into genuine delusions affects only the so-called "intellectual obsessions," especially those of doubt or indecision and then the form of persecutory delusions is the most frequent. The delusional transformation of obsessions was observed in confusional insanity, melancholia and paranoia and the origin of it lies in the dissociation of consciousness which exists in a primitive stage in those that are affected with obsessions.

It was the writer's good fortune to have under his uninterrupted observation within the last three years two such cases, and to keep detailed records showing the possibility of such an occurrence. The cases are briefly as follows:

Case I.—H. D., aged twenty-eight years, civil engineer, three years ago began to notice that he had to repeat his prayers in church several times before he could be convinced that no word had been omitted. At first the disturbance was confined only to the church prayers, but three months later the night prayers at home began to disturb him in a similar manner. He worried considerably over it. He would not be able to go to sleep for fear the night prayers were not said by him completely. Then he would have to get up in the middle of the night to repeat the same act. Being perfectly aware of the absurdity of this state of affairs he would make attempts to control himself and resist the overwhelming desire to repeat the prayers. Then he would become agitated, restless, irritable; he would struggle with himself, but finally would have to submit to that great power which had captured his consciousness. After the act of repeated praying was done, he would become calm and peaceful.

Thinking that perhaps the presence of strangers would help him to overcome the irresistible act, he often made appointments with his friends. Before them he would say his prayers in a loud and distinct voice. He was, therefore, convinced that no words were omitted. However, some time after the departure of the guests he would gradually go back to his previous state and would feel gradually coming on the necessity of repeating the act of praying. Again he would struggle and again he would be overpowered. As this obsession at first concerned only the one act of his life, his daily work did not suffer in the least. Once while at work he was suddenly taken with a chill, became covered with perspiration, began to tremble and cry. He felt that on the previous night he did not repeat often enough his prayers and that he must do it now. He kept on crying and struggled with himself, but the more he struggled, the more he suffered. He had to yield. After that he would have to quit his work several times during the day and pray. At first he did it two to three times a day, but later he was compelled to do it oftener. It is, however, certain that this was done every time not without a great amount of resistance on the patient's part, and every time he would pass through a series of nervous disturbances similar to those mentioned above.

The patient's health suffered considerably, as the inability to overcome the obsession had an exhausting effect on him. Headache, anorexia, general weakness in addition to the insomnia, made their appearance. As the condition did not change and the repetition of the above described act became very frequent the patient, although still conscious of its unreasonableness, began to analyze the obsession. He asked himself at first only occasionally and later more frequently the question: Why should he have to pray so often and what is the reason that no other act of his life disturbs him? At this phase of his disease he contented himself with these questions without being able to explain. But afterward he went further and insisted upon an explanation which he gradually discovered. He says: As almost two years have elapsed from the day when the necessity of praying repeatedly came on and as he finds that he must do it now very often, there is certainly some divine reason for it. He is and was most undoubtedly a sinner, said he, and the Lord, who is kind and fatherly, inclined to every human being, necessarily wishes him to be better. This is the cause why He prompts him to pray often.

The patient's wife and relatives attempted to divert his mind from the newly coming thoughts, but without avail. More and more he became absorbed with this irresistible idea of self-condemnation. He considered himself now a religious sinner, he had erred against the Lord, his religious views were not according to the teachings, he was not a good man, he deserved all that had happened or will happen to him.

The delusion was well formed. The patient's life, character and disposition changed entirely. He refused to work, as there is no use, he says, he will die shortly. Spends his time in worrying and complaining of his unfortunate fate. In the intervals he would pray and pray almost constantly for forgiveness. He did not struggle any more with himself, he did not attempt to overcome the desire of praying, he did not question any more the necessity of praying, as the latter was no more an obsession. On the contrary he hurried to pray, fearing he had not done enough of it, because he now wished to redeem himself, to obtain forgiveness for the lack of religious behavior in the past. He is, therefore, totally *delusional*. The patient became morose, would refuse to see his friends or to go out. He would never ask for food, if it was not offered. As the insomnia increased, he was found several times walking in his room and either praying or talking to himself. Sometimes he would be seen with outstretched hands at the window looking in the dark space and talking aloud. He developed visual as well as auditory hallucinations. The patient presents now an averred case of a typical melancholia with systematized delusions and hallucinations.

Case II.—Mrs. A. G., aged thirty-five years, is taking care of a butcher-shop. Her husband, who is alcoholic, very often neglects his work, and she is therefore obliged to work hard. At the age of ten years she had chorea and at fifteen night terrors. She was always considered unusually bright. Two years ago while handling the knife with which she cuts meat for customers, she suddenly felt the necessity of doing some harm with it. She could not tell at the time to whom her desire was directed. Since then this impulse has come on frequently.

At first she felt it when she was using the butcher-knife for business. Later on the same sensation would be present when she even looked at the knife. She was a woman of a mild temperament, charitable and very kindly disposed toward every one with whom she came in contact. She could not understand why she should feel the necessity of using the knife for a purpose other than for business. She reasoned with herself and, being fully conscious of it, she soon began to fear the knife. As she was the only one in the shop to do the selling, she had to use the knife very often. The constant fear, that some harm may be done by her, put her in a state of anxiety which she could not overcome. As soon as the knife was in her hands, she could hardly use it properly, she would make mistakes, would interrupt the cutting repeatedly and before the work was done she would show signs of suffering; her skin at first would be flushed and at the end of the act would be pale and covered with a profuse perspiration. At times she would not be able to finish the work, was compelled to throw the knife under the table and dismiss the customer.

For a long time the patient suffered agonies. She often came to me to seek relief from this torture. She struggled heroically against this overwhelming feeling, but every time she was overpowered. One morning she came to me informing me that she spent the whole night in thinking over the misfortune and that after due consideration she arrived at the conclusion that her husband is the fault of her suffering. He leads a very irregular life, drinks to excess, maltreats her and her trouble is due no doubt to the worriment he brings upon her by leading a life of debauchery. Gradually she fixed her mind upon this idea and all my efforts to dissuade her were of no avail. She was convinced, she says, of the truthfulness of her explanation.

We, therefore, see that the mental analysis of the future delusion began at this phase of the patient's affection. Very soon a new phase made its appearance. She told me that her husband often expressed his dissatisfaction with her appearance and that he regretted having married her. Now, she says, he makes her miserable intentionally, because he wishes to get rid of her. She was taken at first with a dislike to him and soon began to despise him and her children, of whom she had previously been fond. She conceived the idea that her oldest daughter conspired with her husband against her, as she often saw them talking quietly together. She became suspicious, her suspicions being directed even against her youngest child, who was only five years old. She began to watch her relatives, strangers and customers. Once she overheard a conversation between her oldest daughter and a neighbor and immediately became suspicious of the latter.

The idea of using the knife with the intent to do harm did not annoy her any more. She did not suffer, as she did not struggle with herself. Upon being questioned she replied that she feels the necessity of using the knife against her husband, as he deserves it; all, in fact, says she, deserve to be killed, as she is the victim of her husband's persecution and everybody is conspiring with him against her.

Being more and more convinced that he intends to free himself from her and that he fully made up his mind to torture her, so that she may die, she began to take special care of herself. She would see that the door of her room was tightly closed and locked so that he would be unable to poison or shoot her. She would also examine her bed-clothes, the bureau, the drawer in the table. She was convinced that some day some explosive would be put under her bed-clothes by her husband and she would be blown up. At night she would lay awake for hours and at the slightest noise would get up and listen.

Hallucinations soon developed, but curiously enough they were unilateral. It was only on the right side that she would see visions and hear sounds. The latter were of a threatening character: shadows, terrible faces would approach her to the right and curse her. She thought of protecting herself and for this purpose placed in her room pokers, pieces of iron and the butcher-knife.

In spite of all the vigilance on the part of the family, who was constantly warned by me, she succeeded in eluding them. One night her sister, who was placed in the next room to watch her, heard a terrific noise from the patient's room. At once she went there and found her sister armed with a poker in one hand and a knife in the other breaking the bric-à-brac, windows, mirrors, etc., screaming, shouting and threatening. No words could pacify her and force had to be used to remove the knife from her. Upon being questioned she replied that her husband, who is her greatest enemy, sent devils and animals against her in order to get rid of her as soon as possible. At this phase of the disease as well as before the hallucinations set in I insisted upon the commitment of the patient, but was met with great opposition. The family looked at my proposition with great disfavor, as the old view of considering a commitment as a disgrace still persists and is very difficult to combat. The patient was removed from the city and sent to relatives in the South.

The two cases just related appear to me to be highly instructive. The mental analysis and the continuous introspection which gradually led our patients to delusional insanities were exceedingly interesting from a psychological standpoint. We

could see that when the stage of obsessions was overstepped, the mental introspection which is one of the characteristic features of obsessions, gradually vanished, the consciousness of the mental analysis which is always present in obsessions, gradually merged into those mental processes that constitute the approaching delusion: the patient's personality forms then an integral part of the new morbid ideas, they lose all psychic inhibition, and become slaves of their ideas. Then the previous morbid introspection takes a different orientation. The patients commence to find a harmonious connection between the outside world and the world of their imagination. While before they were only observers or witnesses of their obsessions without being able to explain them, now they find logical reasons for their morbid thoughts; absolute conviction takes place of doubts.

The two cases reported here are of interest, not only to the psychologist, who wishes to draw comparisons between mental processes in normal and pathological states, but also to practical psychiatrists. From the latter standpoint the present contribution puts on record cases showing not only the development of mental affections in individuals with neuropathic tendencies, but also the fact that the so-called neurasthenic insanities may cross the border-line and shape themselves into genuine psychopathies. Finally the transformation of obsessions into delusions by means of a gradual accentuation and of a special orientation of the first—is the most interesting and the most important feature of the present essay. Mental analysis, which seems to be the *sine qua non* of progress in the intellectual domain providing the normal intellect guides it and directs it in the proper channel, may become the origin of special pathological phenomena. The comparative study of the physiological and pathological obsessions, also of delusions, shows that they represent various stages of the same mental analysis. The transformation of one form into another depends upon the favorable or unfavorable basis on which they develop. The mental analysis in a degenerate is always a source for various psychic disturbances; at first obsessions, later genuine delusions.

In conclusion I wish to call attention to the curious hallucinations of my second patient. Some writers, basing their position upon anatomical data, deny the existence of unilaterality of hallucinations (Soury and others), while on the other hand its existence is admitted by many psychiatrists. But the tendency to explain all sorts of hallucinations by means of certain specific cortical localizations is in my judgment of the same order as the desire to find a relation between hysterical and organic anesthesias. Our anatomical and physiological knowledge of the cerebrum is as yet too incomplete to authorize us to explain properly even those psychic phenomena that are dependent upon certain cortical centers. Mental operations are exceedingly complex and any special center of the sensorium by itself is not at all sufficient for their realization. Unilaterality of hallucinations, despite its apparent contradiction, with our anatomical conception of certain centers of the brain, exists nevertheless and, like many other mental phenomena, is not in a strict relationship with special cortical areas, but it depends upon multiple conditions. It should, therefore, have a place in mental semeiology.

MOOT POINTS IN THE TREATMENT OF FRACTURES.[1] [2]

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It is somewhat presumptuous on my part, in the face of so many existing treatises, to offer you anything of striking novelty in dealing with fractures, but I hope to impress upon you such features in their consideration as I have gained from nine years' experience at the dispensary, in teaching and from private practice. These deductions are based on three thousand cases.

First and foremost is the question of diagnosis of the fracture. It is all too common to see the medical attendant who suspects a fracture immediately try to elicit crepitus. Now the error here is, in not trying to determine the point of maximum tenderness by the gentlest palpation. For to this level, if at all, the efforts necessary to elicit false motion and the crepitus incident to it should be limited, and, therefore, I would emphasize the dignity that should be accorded localized tenderness, for it is often the only conspicuous symptom pointing to fracture. There is also a transmitted point of tenderness, *i.e.*, if the bone in its continuity be subjected to pressure, the pain is referred to a remote point which will be found to correspond to that of localized bone tenderness. Still another useful method of determining localized bone tenderness may be spoken of as bipolar bone tenderness, which is elicited by pressing together the two articular extremities of the bones, whereupon the patient will also refer the pain to the level of the fracture.

Up to this stage it is apparent that it is possible, without an anesthetic and without torture, to determine the existence of a fracture. Where deformity exists, and fracture is self-evident, it may eventually be necessary to use an anesthetic, to correct it, so the patient can again be spared the painfulness of crepitus. Until this moment arrives, from a humane standpoint, crepitus is in our estimation to be *subordinated* as a foremost sign of fracture; its greatest value is but relative to aid in differentiating fracture from dislocation, and it should then be elicited only under anesthesia. But as anesthesia carries with it a certain danger to life, the advent of the X-ray was heralded with great delight as a more humane method. This it has certainly proved to be, and where fracture has to be differentiated from dis-

[1] Read before the Harlem Medical Association of the City of New York, Feb. 5, 1904.

[2] Received for publication March 7, 1904.

location, it should unhesitatingly be employed in preference to anesthesia. In a general way, we would limit the use of anesthetics to the fractures of joints and of badly displaced and greatly impacted fragments.

In very young infants, no anesthetic need be employed. A quick, sharp movement will suffice to restore the alignment of the bone. The use of X-rays is not at all satisfactory in fractures of the joints of young children, since the epiphysis is so largely made up of cartilage, that the shadow does not form.

Fractures in the length of the shaft of adults do not urgently call for the X-ray as a means of diagnosis.

We must admit then that the simplest clinical methods, as of old, are ever at our disposal to recognize fractures in general. As the diagnosis of fractures and their replacement occupy so short a time, we advocate the use of ethyl chloride for this purpose, if any anesthetic be called for. Children who are terrorized by the X-ray can often be better examined under anesthesia and X-rayed at the same moment, if necessary. So much for the general principles covering the use of X-rays.

When called upon to treat a fracture, we often find ourselves in a quandary what to do first. At the best, be it said, nothing, until the right device can be applied. Barring this extreme injunction, we should suggest the application of a rubber or any bandage with moderate pressure to reduce the swelling.

In general, there is a tendency to the overtreatment of fractures. Our aim should ever be toward gaining a quick restoration of function, even if at times the alignment and cosmetic be not as perfect. This view I have begun to hold mainly in regard to joint fractures. Too much credit and not enough blame is placed upon the use of various devices in their treatment. The lower extremity left out of consideration for statical reasons, a callus at the expiration of two weeks is firm enough to keep the fractured ends of the bone in place, so that infant, youth or adult should, in most instances, be without splints at the expiration of this time, and the simplest of active, not passive, motions should then be allowed.

Prognosis.—The outcome of a fracture should be viewed from a medicolegal point of view, and we would then shape our prognosis in more exacting terms as to permanent and partial disability and length of time required for complete cure. Experience has taught us to be guarded, even in the most favorable cases. Instances may be multiplied of the occurrence of fat embolism, with sudden death, as occurred to the writer, in a case of fracture of the tibia one week after removal of the cast, or a musculospiral palsy incident to a perfectly healed fracture of the shaft of the humerus, and so on.

Apparatus.—The use of any ready-made splints, except in fractures of the thigh, should be deprecated. The best stock in trade are the simplest materials, plaster-of-Paris, pasteboard, cigar-box wood and non-absorbent cotton.

We want to dwell at some length upon the much maligned plaster-of-Paris. It is in such disfavor because the plaster bandages at our disposal, retailed in the shops, are improperly made and unfit for use. It is unfortunate that it is mainly in institutions that their use is best understood. Such plaster-of-Paris bandages as are sold in the shops may be made fit for use by unrolling, getting rid of the excess of plaster and rerolling them more loosely. The amount of pressure used in applying a roller bandage holds good for plaster bandages, a snug-fitting stocking, flannel or muslin bandage should be applied beneath.

In very stout and aged people, the use of plaster-of-Paris roller bandages is not advised, nor in infants on the upper extremity. Here we would rather use the molded plaster-of-Paris splint. Those who dread the ill consequences of a roller plaster-of-Paris bandage may split one its entire length just after its application and, if necessary, such a bandage may be so removed as to be fit for use again. To this end, all fancy devices are to be discarded and a mitre saw used which makes a straight line and ceases to cut upon reaching the muslin. The latter can then be cut with shears, the cast reapplied and held together with adhesive straps. Save such instances of spiral or oblique fracture with constant tendency toward displacement, we might wholly dispense with apparatus, for perfect adaptation is the best means toward perfect union.

We now pass on to the consideration of some special fractures. Until a few years ago, it was held that a fracture of the metatarsal bones rarely, if ever, occurred as a consequence of indirect violence. The army surgeons of all European nations had encountered a peculiar affection of the foot of the soldier on the march, known as foot-swelling (Fussgeschwulst), pied forcée. This received the most fanciful interpretations until the advent of the X-ray solved the mystery. The clinical picture is as follows: Either in the act of prolonged or forced walking or after imparting a sharp thrust to the fore part of the foot, a smart pain is experienced in the metatarsus. The individual persists in walking and a swelling appears over one of the metatarsal bones, usually the fourth. This is due to the callus which grows larger from day to day as the foot is used. With rest alone, the swelling subsides, but the application of a plaster-of-Paris bandage greatly facilitates matters. Such instances are encountered in civil practice.

Bennet's fracture is another but little known fracture. It is encountered as a fissure of the metacarpal bone of the thumb, caused by indirect violence. It is overlooked because of the absence of any callus or deformity, but characterized by a line of tenderness, extending along the entire length of the first metacarpal bone.

In the treatment of elbow-joint fractures, the

schools are as much as ever divided. To ascertain the exact direction of the line of fracture, and which bones are involved, are matters of great difficulty. Notwithstanding the existence of the X-ray, it is not possible to learn more precisely the particulars of this variety of fracture. Most of these occur during the period of adolescence and as the epiphyses are not ossified before the age of eighteen years, the cartilage is not pictured in the shadow of the X-ray. The question, therefore, remains: What can be clinically diagnosticated in fractures of the elbow-joint to enable intelligent treatment? Barring fractures of the olecranon, which are easily recognized, fractures of the neck of the radius and, finally, fractures of either condyle, all else as to line of fracture of the lower end of the humerus and the position of displaced fragment is largely speculative, whether or not the X-ray be used in one or more planes, or an anesthetic be given. It is held that such fragments can be replaced while the patient is under narcosis. This is frequently a physical impossibility, for the fractured ends of the lower part of the humerus are, in the first place, too small to grasp in the presence of the large amount of blood, nor can their position be influenced by any leverage exerted in motions of the forearm. It is necessary, as in other fluctuations, to rely on surface markings, such as hematomata, abrasions and ecchymosis which indicate the point of impact. Thus we learn to know the direction of force which determines the particular kind of fracture. Kocher has shown that these may thus be differentiated with ease clinically.

If the patient falls on the hand, the pronated radius transmits the force to the external condyles and fractures it. Again, if he falls on the olecranon, with the arm abducted, a like result follows. On the contrary, a fall on the elbow, with the arm abducted, fractures the internal condyle. In fractures of the internal condyle, extension and flexion are not as free as in fractures of the external condyle. Since the olecranon is mainly concerned in these motions, extension is possible to a greater degree than in external condyle fractures; and, again, the distance of the olecranon from the external condyle is greater than the internal.

The diagnosis thus reasonably determined, what shall be our attitude in the treatment of this fracture? There are those who make a hard and fast rule in treating this affection to vary the position at stated fixed intervals, hoping thereby to avert anchylosis and lessen the callus formation. Others, again, adhere to a fixed line of treatment, expecting thereby to better the position and healing chances of the fracture. We have tried both methods and have had failures. We think that in the long run what is to be aimed at in the treatment of elbow fractures is their restoration to useful function. The forearm, at right angles, or nearly so, is such a position. The fragments will heal as quickly in the flexed as in the extended position, and ultimately flexion is made.

It is our practice, if much deformity exists, to anesthetize the patient in order to remedy this condition; if no deformity exists, the forearm is left in its natural position at the time of fracture and, if possible, is brought near to a right angle without causing great force, and retained in a right angle pasteboard splint, where it remains for two or three weeks. At the expiration of this time, all callus having fixed the fragments, the forearm is placed in a sling and the patient allowed to move it of his own accord. The weight of the forearm often carries it into the extended position; the sling can then be again adjusted to a higher level, so as to bring the elbow into more marked flexion. Thus, gradually, by the fourth to the sixth week, the patient can voluntarily use the elbow over a wider area, and then, aided by massage and gymnastic exercises, further results are accomplished.

Similar to the sling, we have found the Thomas' halter of great service in children. The method of Jones' acute flexion is also simple and very effective. But, after all, the main point we wish to impress is that, with the lapse of time, the larger number of patients, young adults mainly implied, get a most useful arm, limited but few degrees in flexion or extension. A very small percentage, notwithstanding all treatment, have a permanent deformity, spoken of as cubitus varus. To offset this result, it was Allis' idea to treat the arm in extension to preserve the carrying angle, but in any case flexion must eventually be employed.

Kocher, Lane and a small following favor primary resection of the offending external condyle, and offer assurance of no interference with the growth of the arm. It has been claimed that these elbow fractures are mostly epiphyseal separations and that, therefore, the growth is likely to be interfered with. In answer to this be it said, that the line of fracture is juxtaepiphyseal and lies in the diaphysis and not the apophysis, wherefor no interference with the growth need be feared.

In Colles' fracture it is now universally agreed that a perfect reduction is the *sine qua non* for its healing. Here the X-ray has taught us that this fracture is no entity, as was originally held by Colles. A common clinical error is the notion that Colles' fracture and silver-forked deformity are synonymous. We have encountered the silver-forked deformity only exceptionally. An accurate diagnosis can be made by noting the differences in the level of the styloids of the radius and ulna. Normally, that of the radius lies at a lower level than the styloid of the ulna, but in fracture of the radius these styloids approach a level. This is known as the sign of Lanier and is used in skiagraphic work to determine old fractures. Next to this, local tenderness at some point over the lower third of the radius is most significant of fracture. The greater number of

Colles' fractures do not call for an anesthetic in their reduction. Only those attended with marked displacement, and they are fewest in number, require anesthetics. Once reduced, there is no tendency to redisplacement. For the location of fragments is caused by the violence and is not supplemented by muscular action. We have in 90 per cent. of cases treated these fractures by

Fig. 1.

Suspension treatment of Colles fracture.

suspension. It is a method spoken of by Malgaigne, brought to the fore by Moore, of Rochester, warmly endorsed in Heidelberg, and spoken of last year by Bier, as the ideal method. We have tried it in hundreds of cases and report the following advantages: great comfort, permitting the use of massage to the muscles of the forearm and earlier restoration of wrist motion, with less chances of anchylosis.

Where there is an effusion into the wrist joint, we also strap the wrist. Very deformed cases, even though they be reduced, do better under Rose's posterior splint. All devices in any way immobilizing the wrist joint are to be deprecated, since they favor anchylosis.

Fractures of the humerus, if low down, require some kind of extension device, as Bardenheur's method of vertical suspension, in addition to the plaster-of-Paris. The weight of the shoulder should be used for counter-extension, in order to guard aginst overriding of the fragments, which is apt to follow from the pressure of the plaster-of-Paris bandage, if the elbow be included in the dressing.

In fractures high up, the upper fragment has a tendency to be abducted, so the lower must be made to follow, by the insertion of a wedge pillow in the axilla, and the whole arm should then be bandaged to the chest with a snugly fitting plaster-of-Paris bandage investing the shoulder, or a splint, which answers the same purposes, made out of cardboard or plaster-of-Paris.

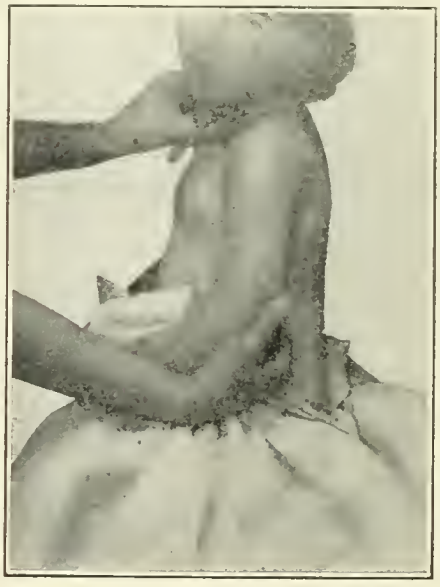
I want to call attention to the difficulty of diagnosticating fracture of the tuberosities, yet this is possible if we study just what motions of rotation, outward and inward, or abduction and adduction, are impaired.

In fractures of the clavicle we have despaired of obtaining anything other than a union with a small callus. A particular point to which we want to direct attention is a method to facilitate recognizing the fracture. By placing one hand upon the clavicle and elevating the arm in the perpendicular plane, by pressing on the elbow, the fragments move and crepitus is appreciated in the gentlest fashion.

A simple Velpeau bandage is what we have finally come to in treating clavicle fractures. Sayres' is efficient, but requires great care in its adjustment and gives no better results.

Fractures of the hand most commonly en-

Fig. 2.



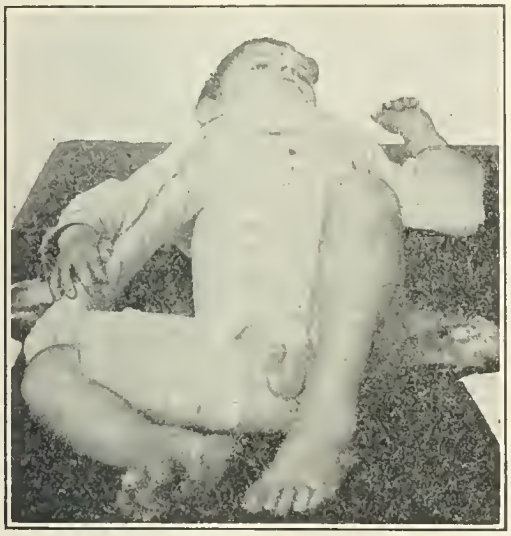
Illustrating the method of eliciting crepitus in fracture of the clavicle.

countered are those of the metacarpal bone. We wish to recommend the simple method of using a roller bandage, grasped by the hand, as an efficient splint. The extensor tendons are thus put on the stretch and act as a posterior splint, holding down the fragments which are, as a rule, slightly displaced, owing to the apposition of other bones, which also accounts for the fact that many days often elapse after the injury is inflicted before this fracture is recognized. Furthermore, it escapes detection because the

level of the line of fracture is near the articulation, and such motion as exists is interpreted as joint motion, but this mistake may be avoided by first locating the line of bone tenderness.

Fractures of the Femur.—I shall dwell mainly on those encountered in children. Here we have to contend with the undesirable feature that obliges these children to be on their back. If they are under three years of age, in the first stages of walking, a heavy plaster cast is unsuitable for ambulatory purposes and the use of a cast in the recumbent posture is a sorry thing at the best. For these instances, vertical suspension is an admirable method and one or both legs may be suspended, depending on whether the counter-extension of one buttock or both suffice to straighten the femur. This method of Hamilton or Shede is without doubt effective, though not pleasing to the eye. The toilet of the child can

Fig. 3.



The pasteboard triangle for the ambulatory treatment of fractures of the femur.

be most readily attended. However, it has been a matter of discussion that in hospital practice and in cases discharged from the hospital who come to us in the dispensary, a vulvovaginitis is found. To obviate the necessity of keeping these infants on their back and overcoming the sanitary obstacles, we present to you this very effective little known, method, first brought to the attention of the profession by the late Dr. Van Arsdale, whose untimely death left its development to posterity.

By the aid of a pasteboard triangle, the fracture of the femur is treated in an abducted and flexed position; positions that both favor a good apposition of the fragments, and also permit of the proper toilet. All the while the infant can be carried in arms. The results of this method are highly pleasing and patients need not be taken to the hospital encountering the disadvantageous change of diet at so tender an age, and the hospital, in turn, economizes in bed space. This method is applicable mainly to children under three years of age, though I have applied it up to the age of five, and it also suggests itself as an emergency measure until some definite plan is devised. For fractures in older children, not too high in the shaft, an ambulatory plaster splint is sufficient.

Your attention is now invited to the consideration of a form of fracture which was unheard of up to a few years ago. Finer study of the etiology

Fig. 4.

A case of coxa vara following fracture of the femur.

of the coxa vara brought to light the fact that untreated fractures of the femur were responsible for them. Such children fall like adults, striking the outer aspect of the femur. It has not been definitely decided whether an infraction of the neck, or epiphyseal separation is the consequence.

The history of these cases is as follows: After a fall the child complains of pain in the hip, there may or may not be outward visible signs of fulness in Scarpa's triangle or back of the trochanter, but the motions are impaired.

Under these circumstances, a synovitis is diagnosticated and the proper treatment instituted,

yet at the expiration of a very brief time, say two weeks, the child feels well and is allowed to walk. The gait is quite naturally halting at first; afterward, it is freer again, only to be followed at a later day by a limp. There are now external evidences of deformity. Elevation and prominence of the great trochanter, shortening and adduction. These are the consequences of allowing the child to walk about on a soft callus, as a result of which, the femur at the site of fracture bends under the weight of the body.

Since attention was first directed toward them these instances are fast being multiplied. Their treatment should be preventive, i.e., on suspicion of fracture. Rest in the horizontal position for four weeks with slight extension and abduction should be made imperative.

Fractures of the skull in children I deem worthy of special mention. They differ from those of adults, in that symptoms of cerebral compression are less pronounced and appear later. We are thus very apt to be misled as to the severity of the injury.

In infants under three years of age, the line of fracture follows the lines of ossification which

Fig. 5.

Showing extensive fracture of infant's skull without symptoms.

develops radically, and mistaking them for sutures, therefore, is very possible. The following history demonstrates the above remarks only too well: An infant survived her extensive fracture fourteen days, during which time she was discharged from two hospitals with merely a diagnosis of large hematoma. At the autopsy extensive fissuring of the skull was found. Just shortly before death, ocular symptoms were manifest, otherwise there were no paralytic symptoms of the limb, and the sensorium was close to that of a normal child until the last forty-eight hours, when she became comatose. About this time, I aspirated the hematoma. The microscopical examination of the fluid revealed brain cells. I would, therefore, in doubtful instances, recommend such a procedure to facilitate diagnosis before operation.

Fractures of the spine are perhaps the class par excellence, which would seem to call for operative treatment as soon as shock has passed off. But, unfortunately, most of the damage to the cord and spine are done simultaneously by the same offending force.

The justification and indication for this operation are prompted by the humane reasons that we have a fair analogy in the treatment of fracture of the skull, and the additional ground that in spite of X-ray localization, lumbar puncture and cytodiagnosis with cryoscopy, we can make no accurate differential diagnosis, between laceration of the cord, or compression by the fragments, leaving out of consideration that in nearly every instance there is a hemorrhage into the substance of the cord. Fracture of the lamina are most favorable for operation, and the use of X-rays is of decided value in these instances.

Fracture of the Patella.—We are opposed to an inflexible rule of primary operation of the patella, for within three or four days, under elastic compression and massage, the effusion into the joint may be sufficiently reduced to permit the fragments to be brought into contact, and when this is possible this treatment may be further encouraged and the patient allowed to walk about with a plaster cast within two or three weeks. The muscles should be massaged each day while the patella fragments are fixed by an assistant. Operation is indicated in multiple fractures of the patella and where the above treatment is not immediately responsive. The sprain most commonly encountered is that of the ankle-joint, and we wish to enter a protest against the meaningless term "sprain," whose pathology *non est*. In our experience with increasing practice over 90 per cent. of these sprains of the ankle are fractures of either one or both malleoli. Crepitus is difficult to elicit, in the face of the effusion, but marked local tenderness over the tip of each malleolus can always be made out and indicates the exact lesion. A great number of these cases, those with slight effusion, can be effectively treated with adhesive strapping. The more marked ones demand plaster-of-Paris bandages, including the whole leg.

In this connection we want to emphasize that the ambulatory splint has come to stay and is the form of a plaster device. It is useful in Pott's fractures, simple fractures of the tibia, and fractures of the femur in individuals of not too great a weight. Its success depends upon its proper application.

Such a plaster bandage should be so applied as to extend from the heads of the metatarsal bones to the condyles of the tibia. The turns of the bandage should be made extra heavy, just above the ankle-joint, and directly below the condyles of the tibia, the whole weight being carried by the column of plaster.

All of our Pott's fractures are allowed about after several days, at the outside a week, and the confinement to bed for long periods is a thing of the past.

Germany and Medical Practice.—The Institute of German Physicians issues a warning to young men against taking up the study of medicine, there being at present a glut of young doctors.

MEDICAL PROGRESS.

SURGERY.

Pyemic Glanders in the Human Subject.—A case which is of interest from its fortunate termination and the extreme rarity of laboratory glanders, is reported by J. C. Stewart (*Annals of Surgery*, July, 1904). The patient was a young woman physician, of twenty-seven years, who had been working with material taken from two very virulent and fatal cases of glanders in men who had become infected from diseased horses. Both died on the seventeenth day with multiple abscesses of the skin and in extreme sepsis. The incubation period was six days, the doctor having made the autopsy on an inoculated guinea-pig while she had an open wound of the finger. There was an absence of the usual skin lesions and the purulent foci were limited to the voluntary muscles. The points aimed at in the surgical treatment of the case after an exact diagnosis had been made were, (1) delay in the hope that the foci might become encapsulated by inflammatory changes in the surrounding tissues, and that the patient might become, as far as possible, immune by the manufacture of her own mallein; (2) the avoidance of local implantation of the *Bacilli mallei* upon wound surfaces where foci were eradicated. Among the methods for the prevention of further inoculation, the application of 95 per cent. carbolic acid and alcohol was more effective than the actual cautery, and the wounds healed quite promptly. After the wounds were closed there were repeated attacks of high fever, pain and prostration, but the patient finally made a complete though tardy recovery.

Sarcoma of the Clavicle.—M. M. Krinkoff's patient (*Roussky Vrach*, No. 21, 1904) was a girl of twelve years, who noticed a year ago a swelling on the right clavicle the size of a hazelnut. This continued to grow quite rapidly, reaching the size of a hen's egg. The tumor is round, painful, and quite dense. The skin over it is markedly distended, immovable, of a bluish red color, and pervaded by a net of blood vessels. The highest point of the swelling shows a beginning ulceration. The dimensions of the tumor from right to left (from its border at the left costo-clavicular articulation to the thickened end of the clavicle) are 28 cm., from above downward 32 cm., its circumference at the base 55 cm. The mobility of the joint is unimpaired; no œdema or pain in the right arm, neck, head or back. Operation under chloroform. Incision over the posterior surface of the tumor. The great amount of blood lost necessitated the injection of a physiological solution as well as the hypodermatic injections of camphor, while the large area of the resulting wound precluded the possibility of its closure, and it was protected by an aseptic bandage. The removed tumor weighed, together with the clavicle, 1,600 grms., and was shown microscopically to be a round-celled sarcoma. The course of convalescence was rather uneventful and the patient left the hospital fully recovered some six weeks after the operation. Unfortunately the further history of the case cannot be given by the author.

Tumors of the Chiasma and an Operation for their Exposure.—A case of this kind was reported by O. Kiliani (*Annals of Surgery*, July, 1904) in a boy in whom operation was decided on but was not carried out, as a sudden change in the boy's condition necessitated an operation for the relief of pressure in the lateral ventricles into which a cystic tumor had evidently perforated. The patient died a few hours later. Autopsy showed a cystic tumor, ruptured, in the region of the optic chiasma. The author worked out an operation on the cadaver which he suggests might be applied in such a case. A Wagner flap in the shape of an omega is made with the frontal bone, the base of which lies about half an inch behind the coronary suture. The dimensions of this flap are five inches in the median line, seven inches for the width, and the base where it is broken off, 3½ inches. The skin incision severs the temporal artery on both sides. The opening in the skull is made with the electric fraise, and then the flap is completed with the saw. After breaking the flap, the dura is incised and the longitudinal sinus tied. The frontal lobes may then be lifted with a spoon and the optic nerves exposed. Care must be taken not to tear the olfactory lobe.

Intravesical Separation of the Urine.—The necessity of obtaining the absolutely uncontaminated urine from the two kidneys and of obtaining all of it for a given time, has long been recognized. Catherization of the ureters afforded a ready means of obtaining this urine, but the method proved to be dangerous because of the probability of its being followed by ascending infection from the bladder. This would not be the case were it a fact that the bladders in patients requiring such investigation to be made were sterile, but such is rarely the case, and the tip of the catheter is almost certain to carry beyond the uretervesical valve sufficient contamination to render ascending pyelitis, if not a certainty, a sufficiently grave possibility to contraindicate catheterization. B. G. A. Moynihan (*Brit. Med. Jour.*, July 2, 1904) states that in his hands the segregator of Harris has not proved to be strictly reliable. This, as is well known, depends for its efficiency upon the principle of unfolding a tent-like structure in the rectum and expanding this beneath the trigone until two separate lakes with a ureteral opening at the center of each are formed in the floor of the bladder. Moynihan states that the first perfectly efficient instrument was created after some modification of the original pattern by Luys, of the Hôpital Lariboisière in Paris. It consists of three portions, a central one within which lies a chain attached at the handle of the instrument to a wheel. This portion, like the lateral parts, is straight to within about two inches of the end, where there is a marked curve forming almost a half circle. This portion is covered with a thin rubber sheathing. When the screw which works the chain is turned, the chain is tightened, and instead of lying in the hollow of the curve of the instrument, it is raised up, forming a diameter instead of a part of the circumference of the circle. The rubber sheathing is also raised up, and in this way a septum is formed. The lateral pieces fitting on to the sides of the central piece consist of two catheters having several eyes. Each catheter drains its own side of the bladder after the septum has been created. The Cathelin instrument is almost identical with this. When the instrument is passed, which is usually accomplished without the slightest difficulty, and it is felt to be within the bladder, it is withdrawn until the beak is in close contact with the back of the pubes. The septum is then liberated, and the water with which the bladder has been filled, is drawn away. Of Cathelin's instruments a variety of sizes are now made, so that with one or the other a fit of any size bladder can be made. Moynihan has found that Luys' instrument is difficult to pass in the male. He therefore considers it indicated in the female and Cathelin's for the male. He closes by stating that he considers the method an invaluable one and believes it to mark a great advance in our ability to differentiate renal conditions.

Animal Cage for Laboratory Use.—It is interesting to note that New York is following the example set

by Harvard and Johns Hopkins, in providing a means of carrying on surgical experimental work. DONALD GORDON, JR., and J. W. DRAPER MAURY (*Annals of Surgery*, June, 1904), present the working plans and a photograph of the cage which they have built for the Surgical Laboratory of Columbia University. The plans are drawn according to scale and are intended to be of practical service for those wishing to construct a similar cage. Any intelligent carpenter, in the opinion of the designers, can, by following these plans, construct a precisely similar cage. The characteristic of the cage is that it has an automatic self-flushing attachment similar to that in general use in public toilets. The odor, which is known to be extremely offensive in the case of all animals, but particularly of dogs, is in this manner kept largely in abeyance, and the animals themselves are reported to be much healthier than in the ordinary type of cage.

Diagnosis and Treatment of Perforating Typhoid Ulcer.—Any additional data and observations on this all-important subject are welcome. E. W. GOODALL (*Lancet*, July 2, 1904) states that the most important constitutional symptom is shivering. In 26 per cent. of cases this occurred at almost exactly the same time as perforation. It may be of all degrees of violence up to prolonged rigors. It occasionally precedes all symptoms, including the pain. The author cites a large number of cases which are studied with unusual care. He states in conclusion that inasmuch as everything depends upon early operation which cannot be made without early diagnosis, he would not now hesitate to open the abdomen if there were definite evidence of localized tenderness and rigidity, more especially if there had been shivering, even in the presence of little or no pain. In his opinion, peritonitis very frequently precedes the perforation. Unfortunately, however, the signs of this peritonitis are not at all obvious, so that the preperforation exploration which has been advised does not seem to him practical. Rapidity of the operation is of great importance. This of course hinges upon the early finding of the perforation. In most of the cases, as is well known, perforation takes place within twenty-four inches of the ileocecal valve. In 60 per cent. of 55 cases, it was within twelve inches of the valve. The best incision is in the semi-lunar line below the umbilicus, except in the presence of localizing symptoms when the incision should be made over the site of the tumefaction. The establishment of an artificial anus is to be employed rather than radical operations of gut resection and union, if the perforation is found to be too large to close with a purse-string or Lembert stitch. These methods require so much time that the low vitality of the patient seems in most cases to discountenance them. Inasmuch as there is almost always a certain amount of peritonitis accompanying the lesion, most of these cases should be drained. The author has used local anesthesia in one case only, and this was unsuccessful.

PHYSIOLOGY.

Innervation of the Stomach.—Agreeing with other observers, W. P. MAY (*Jour. of Physiol.*, June 30, 1904) finds that the vagus contains both motor and inhibitory nerves for the stomach musculature. But, at variance with other investigators, he concludes that the splanchnic nerves have no direct influence whatever, either motor or inhibitory, on the muscular wall of this organ. The effect of vagus stimulation in the cardiac and pyloric sphincters is practically the same as in the stomach. First one obtains an inhibitory effect, followed shortly by an augmented effect.

Movements of the Colon.—Antiperistalsis is a characteristic feature of the muscular activity of the colon, according to T. R. ELLIOTT and E. BARCLAY SMITH (*Jour. of Physiol.*, June 30, 1904). The regressive movement of material so produced explains the need of a strong ileocolic sphincter, and is to be correlated with the development of the cecum. Such antiperistalsis consists merely of moving rings of constriction originating in the circular muscle, and not abolished by nicotine. It is not a coordinated movement of contraction preceded by relaxation. A true persistalsis has not been observed to move reversely. The sacral visceral nerves do not control the cecum. Generally their territory is limited to the final part of the colon, wherein they cause both circular and longitudinal muscles to contract. The inferior mesenteric or sympathetic nerves carry inhibitory impulse to the cecum and to the whole of the colon. The latter tends to show a division into three regions of different activities, the proximal, intermediate and distal. These are completely distinct in the herbivorous mammal, antiperistalsis is then confined to the first division; the sacral visceral nerves control only the last.

The Ileocolic Sphincter.—The junction of the small and large intestine is controlled by a muscular sphincter, and not by a mechanical valve, according to T. R. ELLIOT (*Jour. of Physiol.*, May 3, 1904). Stimulation of the sympathetic nerves causes the sphincter to contract, though at the same time inhibiting the circular muscle in the wall of the ileum and colon adjoining the sphincter. In the cat these sphincter fibers issue chiefly from the thirteenth thoracic and first and second lumbar roots. Both anemia and adrenalin produce the same effect as sympathetic stimulation, that is, constriction of the sphincter. Removal of the spinal cord abolishes permanently the power of the sphincter to keep apart the contents of the ileum and colon.

The Adaptation of the Pancreas.—The frequency with which modern physiological research reveals the adaptability of the various bodily organs to changes in the environment or to new uses, is again shown by the recent discoveries of F. A. BAINBRIDGE (*Jour. of Physiol.*, May 3, 1904) on the human pancreas. The following is a summary of the author's conclusions: The pancreas of adult dogs normally contains no lactase, although this enzyme is present in extracts of the intestinal mucous membrane of such dogs; yet when dogs are fed for two or more weeks on a milk diet their pancreatic juice, obtained by means of secretin, invariably contains lactase. The formation of lactase by the pancreas is a specific reaction to lactose; it occurs only when lactose is given by the mouth, and not when it is injected subcutaneously. The lactase of the pancreas is in no way derived from that present in the intestinal mucosa; it is formed by the pancreas itself and represents a definite adaptation to a milk diet on the part of the pancreas. The subcutaneous injection of extracts of the intestinal mucous membrane of a milk-fed dog into a biscuit-fed dog causes the pancreas of the latter to produce lactase. This is the only means apart from a milk diet by which the pancreas can be made to manufacture lactase. Extracts of the intestinal mucosa of biscuit-fed dogs are ineffective. The adaptation of the pancreas to lactose is carried out by a chemical mechanism. Lactose acts upon the intestinal mucous membrane to produce some substance, which is carried in the blood-stream to the pancreas, and stimulates the latter to produce lactase. Secretin appears to have a definite composition, is in no way modified by difference of diet, and is not con-

cerned in the adaptation of the pancreas to food; it calls forth the secretion by the pancreas of all the enzymes present in the gland at the time. The pancreas of new-born puppies contains no lactase, although the enzyme makes its appearance within a few days. It has not yet been determined how far this process is also a chemical adaptation.

Ionic Permeability of the Red Blood Cells.—The red blood cells of man and the frog acquire under the influence of CO_2 electrical properties by virtue of which their enveloping membrane becomes permeable to anions ,according to R. Höber (*Pflüger's Archiv*, March 28, 1904). This permeability to anions does not occur in the absence of CO_2. The production of this condition is brought about by means of the hydrogen ions, whose point of attack are the anodic colloids of the enveloping membrane, which become cathodic. Cations like Fé ††† and Al ††† which act upon anodic colloids similarly to H† produce no anion permeability. The production of the latter process is a reversible one.

Production of Sugar in the Organism from Albumin and Fat.—A critical and experimental research into this problem has been made by E. F. W. Pflüger (*Pflüger's Archiv*, May 25, 1904). In a previous monograph upon the subject of glycogen, the author showed that the production of this substance from proteid has not been proved. Theoretically the possibility of such a transformation is denied, for the structural elements of glycogen are not only uniform among themselves, but are wholly different from those of the albuminous molecule, whose constituents consist of various substances. Pflüger was of the opinion that glycogen is produced probably from carbohydrates or substances closely related to the latter. The author was able to show that in all known investigations the immense culmination of sugar in diabetics is explained by the amount of glycogen stored up in the organism. The above theory of the author was fortified by the fact that the liver cannot prepare glycogen from all forms of carbohydrates. Thus cane sugar and milk sugar, injected into the blood, pass the liver unchanged and are eliminated in the urine. It would only be necessary for the liver to hydrolytically split cane sugar and milk sugar in order to produce glycogen. The liver does not possess this capacity. This would be difficult to understand if the liver had the power of building up glycogen out of the numerous hydrolytic producers of albumin. It has been found that the total extirpation of the pancreas, performed by a careful and skilful surgeon on a well-nourished dog at one sitting is really followed by no diabetes. On the other hand, if the pancreas be removed piecemeal, at several sittings, diabetes will result. What is the explanation of these differences? In the first place one must recognize a condition discovered by Hoffmeister, known as "hunger-diabetes." A dog in whom the nourishment is considerably reduced will eliminate a considerable quantity of sugar. The author explains this phenomenon as follows: The result of starvation is to show the burden of metabolism upon fats and carbohydrates. But inasmuch as fat can be oxidized only after it has been transformed into sugar, it follows that the greater part of metabolism proceeds through sugar. This results in a strain upon these cells that are concerned in the elaboration of sugar with a consequent exhaustion and alteration of function. The quantity of sugar, therefore, which would otherwise satisfy all the needs of nutrition is no longer oxidized and consequently appears in the urine. This form of diabetes occurs without extirpation of the pancreas. In the case of a starving animal, in which the pancreas is partly or entirely removed, a traumatic diabetes, resulting from the operation is added to the starvation diabetes. If, however, after extirpation of the pancreas the animal be fed, the resulting digestion and absorption occasion an increased volume of blood, an augmentation of the work of the digestive cells, and a stronger peristalsis. These conditions powerfully stimulate the numerous wounds in the abdominal cavity and lead to a reflex production of sugar. At the same time the absence of the pancreas impairs the process of digestion and the fats pass largely unchanged with the feces. The author successfully repeated the experiment performed by Seegen and confirmed by Weiss, namely, the formation of sugar by the digestion of liver substance with fat and fatty acids.

Influence of External Hemorrhage on Proteid Catabolism.—The knowledge of the chemical changes brought about in the organism as the result of the loss of a large amount of blood will form an important basis for future clinical and pathological researches along this line. P. B. Hawk and W. J. Gies (*Amer. Jour. Physiol.*, June 1, 1904) found that external hemorrhage, equal to from 3 to 3.5 per cent. of the body-weight, of dogs, produced the following effects: In well-nourished animals, in weight and nitrogen equilibrium, and fed continuously on a diet of constant composition, there was a temporarily increased output of nitrogenous and sulphur containing products in the urine, and a valuable effect on the elimination of phosphorized substances, though mainly a decreased elimination of the latter. Total solids in the urine were increased with the nitrogen and sulphur catabolism. These effects were relatively slight after one bleeding of moderate amount, but became more marked and lasted longer with repeated losses of blood. The increased elimination of the catabolic products occurred only in the urine. The amount, consistency, and composition of the feces were apparently unaffected by the hemorrhage. Digestion did not appear to be materially disturbed at any time, even after several severe hemorrhages at short intervals. There was little or no effect in intestinal putrefaction. Body-weight steadily declined in the original equilibrium diet after each bleeding. When the animal was allowed to eat freely hemorrhages were followed by gradually increased weight. Moderate loss of blood markedly increased the appetite and caused thirst, even during periods when the animal was receiving an excess of food. Excessive losses of blood had apparently an opposite effect. Volume of the urine and its specific gravity fell at first after hemorrhage, then rose far above the average for several days, returning shortly to the usual average. Hemorrhage caused an immediate stoppage of the formation of urine, a subsequent retardation of flow, and finally a decided stimulation. It also inhibited the hypersecretion of saliva during ether anesthesia. There was an occasional glycozuria, due solely to the anesthetic.

The Part Played by Benzine in Poisoning by Coal Gas.—Coal gas produces first excitation and then rigor of the isolated frog's muscle, according to R. Staehlin (*Proc. of the Royal Soc.*, Vol. 73, No. 489). Frogs exposed to coal gas show excitatory phenomena which are absent when the animal is placed in an atmosphere of CO or nitrogen. The specific effects of coal gas in frogs are determined by the presence of benzene in the gas, and can be produced by air containing the same percentage of benzene. There is no reason to suppose that the poisonous effect of coal gas in mammals is determined by anything except its content in CO.

The Physiological Action of Radium.—The effects of this substance on the principal constituents of the body—albumin, carbohydrates and fats—has been studied by J. WOHLGEMUTH (*Berl. klin. Woch.*, No. 26, 1904). He exposed these for a period of from fifteen to thirty minutes daily to the rays and made an analysis at the end of five days. Repeated trials showed that the composition of the materials was unchanged. It was also shown that the elective action on lecithin, as claimed to exist by Schwartz, had no foundation on fact. The effect of radium on tuberculous lungs was studied by exposing them to the radiations, and it was determined that the exposure in an incubator resulted in the absorption of an amount of nitrogen four times greater than that of the control specimen. This is explained by assuming that the resistance to autolysis after death is lessened by the action of radium. If this is correct, then the difference in the amount of nitrogen would become less as the resistance of the control specimen was overcome. This was actually found to be the case, for after ten days the amounts of nitrogen in solution were practically the same in both specimens and continued so.

MEDICINE.

Effects of Endofaradization and Endogalvanization on the Stomach.—A study of the effects of these measures on the gastric secretion, motility and sensibility has been made by A. BORRI (*Deut. med. Woch.*, 1904, No. 26), who also found that the reports made by different sources varied greatly. His own observations were conducted on ten persons, two of whom were practically normal as regards their gastric and intestinal conditions. The aggregate number of individual tests was 106. Regarding the secretory functions of the stomach he found that neither form of current had any effect, the occasional changes in the hydrochloric acid and pepsin contents being attributed by him to the procedures necessitated by the introduction of the electrical apparatus. It was shown, moreover, that the normal stomach, in contrast to the atonic one, exhibited a comparatively greater degree of contraction on application of the faradic current. Disturbances of motility cannot be said to be in any way markedly influenced by the faradic stream. The galvanic current, however, seemed to exert a favorable influence on sensory disturbances of the stomach, and the author feels certain that this effect was gained independent of suggestion. When the negative pole was placed in the stomach a well-marked anodyne effect was noted, but the writer is not prepared to explain this action.

Epidemiology of Typhoid.—It is some fifty years ago since Pettenkoffer advanced his ground-water theory, to explain the occurrence of large epidemics of cholera and typhoid. His theories have not been generally accepted, but now, at last, R. EMMERICH and W. GEMÜND (*Münch. med. Woch.*, June 21 and 28, 1904) have brought convincing proof which shows that the water-supply plays only a subordinate rôle. With high-ground water the germ cannot multiply, since the necessary food-stuffs and air are washed out of the superficial layers, and since the temperature is too low to permit of reproduction. As soon as the ground-water sinks water will travel from below upward by capillary attraction and dissolve the organic and inorganic constituents of the soil; furthermore the pores are filled with air, the temperature is more suited for active growth and the rays of the sun will kill off a large number of saprophytes which would interfere with development. From one focus in the soil the germs are spread by the shoes of those who travel over it, by rats, mice and many insects and worms. These facts can be experimentally proven by filling a cylinder with soil and dipping its lower end into a fluid containing cholera germs in suspension. There will be a capillary flow in an upward direction, and in eleven days the entire column will be infected. If the soil has been washed so that it contains no nutritive material the bacteria die off rapidly. Under favorable conditions the germs do not die off before thirty days; this corresponds with the fact that epidemics generally last thirty-five days. As the cholera germs proliferate downward into the deeper strata of the soil the capillary stream will carry up with it some of the products of their metabolic activity, chiefly the enzyme cholerade, which limits the development in the superficial strata. It is a well-known fact that certain cities are immune from cholera; this is also due to peculiarities of the soil which here is made up entirely of clay, consisting of small, sharp particles which are in constant motion and thus destroy the germs mechanically. Cities situated partly on sand, partly on clay, are only partially immune. The majority of symptoms which make up the disease cholera are merely evidences of nitrite poisoning and depend upon the property of the bacteria to reduce nitrates which occur abundantly in drinking water and many vegetables. Individuals who carefully avoid nitrates will often escape during epidemics. In very much contaminated soil the proportion of nitrates is usually high, and the reducing power of the germs is greatly enhanced where there is an excess of these salts, hence exceptionally severe symptoms can be expected under such conditions. The practical deduction is that proper irrigation of soil during dry weather will be the best safeguard against epidemics.

Virulency of Sputum in Pneumonia.—Since the sputum of severe or fatal cases of pneumonia is highly virulent toward mice, while that of mild cases hardly affects them. D. STÜRZ (*Zeitsch f. klin. Med.*, Vol. 52, Nos. 5 and 6) determined to investigate if the time which elapses before the animals die bears a definite relation to the severity of the disease. In every instance one cubic centimeter of the fresh expectoration was injected subcutaneously. Two different mice, injected with the same sputum, generally died in approximately the same number of hours. In fatal cases the animals lived eight to eleven hours, in cases with doubtful prognosis eleven to twenty hours, and in mild cases twenty to thirty-five hours. The virulency does not fall with the crises, but remains relatively high for twenty-four hours, hence other factors bring about the crisis. With exacerbations the virulency also rises, and since this rise occurs before the appearance of physical signs, it is of considerable practical value. It is thus advisable to inoculate a mouse every morning and evening.

Specific Precipitin Reaction for Bothriocephalus.—A very interesting communication is presented by ISAAC and VAN DEN VELDEN (*Deut. med. Woch.*, 1904, No. 27) on this subject. From a case of *Bothriocephalus latus* infection they prepared a solution obtained by autolysis under aseptic precautions from the fresh proglottidæ. With this they were able to obtain precipitation when added to the blood serum of the patient afflicted with the disease, but failed to get any reaction with the serum of a healthy person. Rabbits were treated with the solution, and the serum from the latter showed similar phenomena. This was confirmed by control tests in normal animals. It appears, therefore, that certain albuminoid bodies pass from the *Tænia* into the patient's circulation, which being in the nature of foreign materials, succeed in producing specific precipitins.

The Medical News.

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SATURDAY, AUGUST 13, 1904.

DR. GEORGE F. SHRADY.

The resignation of Dr. George F. Shrady, as editor of the *Medical Record,* comes as a surprise to the profession. For thirty-eight years he has conducted this well-known journal, establishing for himself the longest editorial record in the country; and it is with regret that we learn that he is no longer to be the presiding genius of the paper he has conducted from its start.

Through the most exciting years of medical discovery Dr. Shrady has sat on high, watching the scientific heavens for new stars of thought; and the sky has been brilliant with them: Bacteriology, antisepsis, Koch's tubercle bacillus, appendicitis, yellow fever, and others too numerous to mention. Each and all he has recorded year by year, discerning with a keen eye the true lights from the will-o'-the-wisps that flicker over the medical horizon.

His position has been an enviable and an honorable one, that of disseminating new truths to the world, and he has filled it with a dignity and an energy of which few other practising physicians are capable.

Among the many inestimable services that Dr. Shrady has rendered to the medical profession, we single out the high ethical and professional standards of medical literature that he has always proclaimed and practised, and in any controversy in which the honor or the privileges of the profession have been concerned the practitioner of the country has always had a worthy and high-minded, as well as quick-witted spokesman.

The laity who are familiar with Dr. Shrady's name as one of the surgeons who attended President Garfield, and as an authority to appeal to in times of agitation, probably do not realize how much they owe to him directly for his strong influence in civic matters pertaining to health. Much of the excellent sanitary condition of New York City, as well as many matters referred to the Board of Health, owe their existence to his indefatigable energy in pushing reforms through, and in arousing physicians to a sense of their duty. His words, whether written or spoken, have carried authority among the powers that be, and have brought assurance to the readers of the daily press; so that in many crises of the city's development, in scares of cholera, smallpox, plague, his voice has been heard with profit.

That Dr. Shrady should resign his power in the prime of life is a loss to the profession, but it gives him a well-earned rest after what has been a long series of ardent and arduous achievement. We bid him an editorial farewell, feeling with him that the *Record,* which has been the child of his creation, will be in skilled hands, under the editorial direction of Dr. Thomas L. Stedman, and no doubt will continue to occupy the position of prominence that Dr. Shrady has made for it.

INFECTION IN TUBERCULOSIS.

The recent discussion of the subject of infection in tuberculosis at the New York Academy of Medicine (see Society Proceedings in this week's Medical News, page 327) brought out a number of interesting conclusions drawn from recent observations and study with regard to modes of infection and tuberculosis, which should be familiar to all of the medical practitioners of the country.

It seems very clear now that while the infection with tuberculosis by means of inhalation may be an important factor in the production of the disease, there are very striking considerations which make this seem much less than it used to be considered. For example, Dr. Jonathan Wright, of this city, who, as a distinguished specialist in diseases of the nose, throat and larynx, has had many opportunities for the study of this question, does not hesitate to express a reactionary opinion, which must carry no little weight. He consid-

ers that it is practically impossible for dust particles to find their way past all of the protective mechanisms that nature has spread so abundantly before the only mode of ingress to the lungs. After all, it should be borne in mind that all air must, in normal individuals who breathe through the nose, pass through the tortuous nasal passages, which are almost sure to catch and retain any foreign particles that may be in the air. If by chance, however, dust particles or minute globules of expectorated material should find their way past the mucous membrane of the nose, there are still abundant opportunities for them to be caught and retained before entering the lungs. The passage into the lungs is not direct, but almost at a right angle and at every portion of the course, moist mucous membranes are ready to catch dust particles or any other material that may be present. Even if air with infectious material in it should find its way into the pharynx and be carried by the current of air toward the lungs, there still remain the two narrow chinks between the true and the false vocal cords to be passed before they find entrance even to the trachea. The chink of the glottis is very narrow and foreign particles of any kind must find their way through only with the greatest difficulty and by the merest chance.

Even, however, if they find their way into the trachea, this does not assure them direct entrance into the lungs except when the breathing is very deep and fast, for it is only at such times that air is ever carried directly beyond the large bronchi into the smaller air passages. Ordinarily, in quiet breathing, the air currents of respiration do not pass much below the bifurcation of the trachea, and the interchange of gases necessary for vital processes takes place by means of diffusion. The air in the large bronchi is comparatively quiet, and from it any particles that may be present are likely to settle by means of gravity on the moist mucous membranes, where they are retained. From here they are inevitably carried by the ciliary processes of the cells outward, and so there is very little chance of them proving really infectious. Just how, in inhalation, tuberculous infection of the apexes of the lungs takes place is rather difficult to understand. After all, it is too much to think that air containing particles of solid material is carried directly by means of a current into the small alveoli of the left apex, for instance, whose infection is the most frequent initial lesion in tuberculosis.

After comprehending these difficulties as regards inhalation tuberculosis, the recent observations with regard to possibilities of tuberculous infection through the intestinal tract, become even more interesting than they would otherwise be, though they represent some of the most important additions to our knowledge during recent years. Professor von Behring announced not long ago that in calves at least it is perfectly possible for tubercle bacilli to pass through an uninjured intestinal mucous membrane. Other observers have found this same thing to be true, especially when animals are fed rather plentifully on fatty materials. Fat droplets are taken up directly by the mucous membrane and passed on to the lacteals. If these fat droplets contain tubercle bacilli, these are not pressed out during the passage through the mucous membrane. Dr. Ravenel, of Philadelphia, in a series of very important observations on dogs fed with butter, which had been mixed with tubercle bacilli, found the bacilli in the thoracic duct and in various portions of the absorbent system four hours after the animals had been fed. It is easy to understand that bacilli carried up through the thoracic duct and poured into the venous circulation, to be carried almost directly to the heart and thence to the lungs, might very readily, under such circumstances, produce an infection of the lung without giving any sign of the fact that they had obtained their entrance originally into the body through the intestinal tract.

These considerations become of even more interest when it is realized that there is no doubt in the minds of most impartial bacteriologists, at the present time, that bovine tuberculosis may occur in human beings as the result of infection through the intestinal tract by means of food material contaminated with tubercle bacilli from cattle.

Even German investigators have found that, assuming the truth of Koch's principle of the special virulence of bovine tubercle bacilli, in a certain proportion of cases of human tuberculosis the bacilli present were surely of the bovine type. Besides Dr. Ravenel, such distinguished American investigators as Professor Theobald Smith and the late Dr. E. A. de Schweinitz (whose loss to American medicine will be felt nowhere more acutely than just in this subject) found the same thing to be true. There seems no reason to doubt, then, that Professor Koch's announcement of the non-intercommunicability of bovine and human tuberculosis is without foundation in truth and may easily give rise to added

dangers of the contraction of tuberculosis, if it should induce any relaxation of the laws for the protection of human beings against tuberculous infection from cattle either through meat or milk.

In a word, the whole question of modes of infection in tuberculosis is on trial as yet. It is perfectly possible that many of the cases of lung infection may be primary in the lungs and yet the infectious material may have come through the intestinal tract. It must not be forgotten that there is much more danger of dust getting into the mouth and then being swallowed in the sputum, perhaps to escape digestion in the stomach and find its way through the intestinal wall in emulsified fat than there is for it to gain an entrance into the pulmonary tissues when inhaled into the lungs. There is room for further investigation with regard to the occurrence of primary tuberculosis of the thoracic duct and of the possibility of infection through this. Even the occurrence of enlarged bronchial glands is not an absolute sign that the port of entry for the infection was through the larynx and trachea. Every physician who has the opportunity to make autopsies on cases of tuberculosis in an early stage, or on children who have died from tuberculosis, should pay particular attention to these points, since it is possible that much that is of great practical value may be learned from them.

ECHOES AND NEWS.

NEW YORK.

Appointment of Dr. Jenkins.—Dr. William T. Jenkins, ex-Health Officer of the Port and brother-in-law of Richard Croker, has been appointed Sanitary Engineer in the Health Department at $2,400 a year. The appointment was made by Commissioner Darlington from July 1, 1904.

State Experts for the Immigrant Insane.—Dr. Sidney D. Wilgus of New York City has been appointed by the State Commission in Lunacy as chief examiner, under the law passed by the last legislature creating a State Board of Alienists to act in concert with the United States examiners at the port of New York in the inspection and return to their own country of all immigrants suspected of insanity, epilepsy or imbecility. Dr. Wilgus will receive a salary of $5,000. The Lunacy Commission aso appointed as assistant examiners and members of this board Dr. George D. Campbell of New York City and Dr. W. E. Sylvester of College Point at a salary of $3,000 each.

Northern New York Medical Association and St. Lawrence County Medical Society.—It has been decided to hold the meeting of both these medical bodies on October 18, 1904, at Ogdensburg, N. Y., the Northern New York Medical Association holding session during the afternoon and the County Society during the evening of the same day. The afternoon session will be held at the St. Lawrence State Hospital, upon the invitation of the Superintendent, Dr. R. H. Hutchings. The evening session will take place in the City Hall. Following the evening meeting a banquet will be held under charge of both societies. This arrangement will permit members of either society to attend both meetings and it is desirable that the members cooperate as far as possible to make this union meeting both pleasant and profitable by their attendance and participation. It is also urged that members who will present papers notify (giving title) the president of their respective society on or before July 25, in order that a provisional program may be prepared at an early date. Members are urged to present for the benefit of the Society any interesting cases occurring in their practices.

Cost of Tuberculosis in This City.—New York loses $23,000,000 annually through tuberculosis, according to Dr. Darlington. "Estimating the value of a single life at $1,500—not necessarily a high estimate—and taking only those lives between sixteen and forty-five years," said Dr. Darlington, "the loss of life in this city alone from tuberculosis mounts up to the startling sum of $23,000,000 annually. The death rate here is much lower than in large European cities, which shows what has been accomplished by the spread of clinics and of preventive measures, of better housing conditions, of the warfare against dark, interior rooms, and unsanitary plumbing which has gone forward here during the last few years, yet the death rate will not go much lower with us unless we take even more radical steps. It is a question simply of educating the people and of general sanitary conditions. The general sanitary conditions are still bad in New York, and the inflow of immigrants who must be educated in right living is constantly increasing. Sometimes we may feel discouraged, but the fight is a good one, and I have infinite faith in the future. We not only know more about consumption, but we are applying what we know more sanely and searchingly."

Beta-Naphthol in Milk.—The New York Board of Health is closely examining samples of milk suspected of containing a new preservative which has been said to cause much illness. The drug is beta-naphthol, a coal tar product, according to the *Times*. Our Health Board says: "They are a little afraid of our rigid examinations here in New York. Nearly all of these adulterations which are tried outside fail to come here. We do have adulterations here, too, of course, but they are not so plentiful as elsewhere. We are constantly endeavoring to keep down the death rate of infants in the Summer, but our observation teaches us that more deaths are caused from a lack of cleanliness than from adulterations."

Receptions to Sir Felix Semon.—Sir Felix Semon, D.V.O., physician extraordinary to the King, who is to deliver the address on Laryngology at the St. Louis Congress of Arts and Sciences, will arrive at New York early in September. He will be the guest while in New York of his life-long friend, Prof. George M. Lefferts, and also of Dr. Emil Mayer, who is associated with Dr. Lefferts as co-editor of the *Internationales Centralblatt für Laryngolagie*, and of which Sir Felix has been editor-in-chief since its beginning twenty years ago. The American tour, which has been arranged by Dr. Mayer, will consist of a visit to Niagara Falls, thence to Chicago, where

Prof. E. Fletcher Ingals and the Western Laryngologists will entertain both Sir Felix and Lady Semon, who accompanies him. At St. Louis the address is to be delivered, for which purpose he was specially invited. During his stay there, Dr. M. A. Goldstein, editor of the *Laryngoscope*, will be his chief entertainer, assisted by his fellow Laryngologists. Sir Felix and Lady Semon then travel to Washington, where Dr. J. H. Bryan will see to their comfort. Philadelphia is the next stop, where Lady Semon has relatives. At Montreal, where the travelers will be the guests of Dr. and Mrs. H. S. Birkett, Sir Felix will take a four weeks' hunting trip, as the guest of Sir Thomas Shaughnessy and the Canadian Pacific Railway, returning to New York City October 31, to remain a week before sailing for home. This last week is apt to be a busy one for them, as the program consists of a dinner under the auspices of the Laryngological Section of the New York Academy of Medicine, an address on Malignant Diseases of the Larynx at Hosack Hall, by invitation of the same section, functions on different evenings to both by Dr. Lefferts, Dr. Emil Mayer and Dr. Thomas R. French of Brooklyn.

The Lying-in Hospital.—During the month of July the Lying-in Hospital has had 556 applicants for treatment, of whom only 181 could be admitted and cared for in the hospital. The number of children born in the hospital during July was 137. For the same period in the outdoor department 334 persons applied for assistance at their own homes and 278 were treated in confinement. The number of medical visits made was 1,304. Through the Ladies' Auxiliary 1,726 garments were distributed and 232 patients supplied with care-takers. The auxiliary also gave coal and other articles and made 1,287 visits to assist and aid. The Diet Kitchen distributed tea, coffee, bread, sugar, oatmeal and milk. The work of the Lying-in Hospital is increasing rapidly, but the number of patients received is still limited to one-third of its actual capacity, owing to lack of means to open additional wards. As large a number of students as can be admitted are now receiving training in obstetrics, and some 50 nurses.

Typhoid Epidemic Near Jerome Park Reservoir.—The authorities of the Health Department admitted yesterday that there was an epidemic of typhoid fever in the Bedford Park section of the Bronx, and that the condition of affairs there was becoming alarming. Forty-two cases of typhoid were discovered in one block alone, and so far as could be learned last night nearly all of the persons afflicted with the disease were stricken after drinking water from a spring which empties into the uncompleted Jerome Park reservoir. This reservoir was soon to be put into use as a storage reservoir for the water supply of the Borough of Manhattan, but at present it contains no Croton water, and there is no danger of the epidemic spreading to Manhattan. The disease is now confined to a district which practically abuts upon the new reservoir at Jerome Avenue and One Hundred and Eighty-fourth Street, where the contractors engaged in completing the reservoir are at work blasting rock. Dr. Charles T. Roberts, the Sanitary Superintendent of the Health Department, and his assistant, Dr. Charles F. Spencer, accompanied by several other physicians, went to the typhoid district yesterday and made a thorough investigation of the conditions. They learned that all of those who are now suffering from the disease had partaken of water from a near-by spring which forms a creek running through the new reservoir. Samples of the water from this creek, from the spring directly, and portions of the muddy soil there were carried away by the Health Department officials for analysis.

PHILADELPHIA.

New State Journal.—*Sanitation*, a monthly journal of hygiene and sanitary science, has begun publication, No. 1, Vol. I, being issued in July. It is to be the official bulletin of the State Board of Health of Pennsylvania and of the Associated Health authorities of Pennsylvania.

Report of School Inspection.—During April, May and June, the months first devoted to the inspection of public schools, 155,707 children were examined and 6,936 excluded because of disease. The eyes of 5,150 were found to be affected, 1,807 being obliged to wear glasses. The work of the new corps of inspectors has been entirely satisfactory to the Health Department and the Board of Education. The health of pupils is noticeably improved as a result of inspection.

To Enforce Vaccination.—The fifty medical inspectors of the city are making a house-to-house canvass to vaccinate all people. The names and addresses of those who refuse, together with their employer and physician, are registered at the department. In each case the physician and employer are notified of the refusal. The employers are notified that every store, mill, manufactory, hotel or church in which a case of smallpox is found will be closed for fumigation.

To Stop Assaults.—The Bucks County Medical Society, at their meeting of August 3, discussed at length the subject of assault upon women which are of late becoming so frequent. The sentiment of the society was shown by the unanimous adoption of resolutions asserting the necessity of the most drastic punishment in the case of men convicted of criminal assault and endorsing the bill drawn by Senator Grimm providing castration as the punishment of such offense.

Sanitary Rules Changed.—The Department of Health and Charities will on September 1 put in force new rules governing house drainage, ventilation and cesspools. Plumbers must register annually and place a sign to that effect before their place of business. Outside closets flushed directly from the water supply pipes are to be done away with. Wooden bath tubs are also prohibited.

CHICAGO.

Hospital Accommodation Given by Sanitarium.—The Sisters of St. Anne have completely isolated one wing of their sanitarium for consumptives at Forty-ninth and Thomas streets. They have fitted up operating and dressing rooms and are now taking general medical and surgical cases. The hospital building was erected only a few months ago, and is equipped with all modern appliances.

Illinois State Board of Health Report on Drainage Canal.—The Illinois State Board of Health, in a recent report, summarizes the results of the investigations made by the board to determine the sanitary effect of the new flow southward from Lake Michigan. That the waters of the canal in no wise contaminate the water supply of towns along the Illinois and Mississippi rivers is not only the firm conviction of the Board of Health, but it also is its opinion that the waters of those streams are actually benefited by the added flow coming down from Chicago. Mingling of the canal waters with

those of the Missouri, from which St. Louis draws her supply, would furnish an improvement which could not well help pleasing the consumers of the river towns, in the belief of the board.

Summary of Report.—The conclusions reached by the health officials in their long search into this question are summarized thus: That the water of the Des Plaines and the Illinois rivers is purer and better since the opening of the canal on account of the large amounts of pure lake water coming through the canal and diluting the sewage in these streams. That the water of the drainage canal in its present condition probably is purer and better than the water of the Illinois river at low stage. That a great part of the contamination of the Illinois river comes from the drainage from farms and villages and the sewage from cities and refuse from manufacturing industries along its shores, and that the water of the drainage canal actually improves these waters by the dilution of this original contamination. That the water of the Illinois river above its mouth is purer and freer from contamination than is the water of the Mississippi river into which it flows. That the water of the Missouri river above its mouth shows evidence of more serious sewage contamination than does the water of the Illinois river above its mouth, and that the Missouri river water, instead of being contaminated by the water of the Illinois river, with its burden of Chicago sewage, actually would be improved by it. That farm, village and city drainage is a serious source of contamination to streams, and that the Missouri river drains a larger area than the Illinois river, and, further, is badly contaminated by the animal refuse from the packing industries of Kansas City and Omaha. That the city of St. Louis takes its water from a point on the west side of the Mississippi, but a short distance below the mouth of the Missouri, and that the great bulk of the St. Louis supply is taken from the Missouri river water.

Illinois Pure Food Law.—It is a tribute to the advancement in knowledge of dietetics to have pure food laws on the statute books of the State, but unless they are enforced they afford little or no protection to the people. State Commissioner Jones of Illinois has been annually vigorous in prosecuting manufacturers of food products, and it is said that already suits have been brought against two hundred dealers and manufacturers for alleged violations of the pure food law. Many of the suits charge false labeling, while the bulk of them allege adulterations of the most injurious character. Among the adulterations found are "process butter," impure maple syrup and spurious vinegar. The belief is prevalent that Illinois affords a rich picking for dealers in and manufacturers of food frauds. That this belief is well founded there can be no doubt, from the fact that one hundred of these suits are against Chicago and Cook county dealers, showing that the metropolis, with its two million consumers, offers a market for food adulteration and misbranded food products so large as to defy the efforts of the most watchful and energetic food commissioner and food inspectors.

New Buildings at Dunning.—Four of the buildings authorized by the people of Cook county, when they approved the recent bond issue of $500,000, have been completed. They are the Home for the Cure of Tuberculosis, which has taken the place of the old consumptive hospital, and three cottages for the treatment of insane persons. The Home for the Cure of Tuberculosis was built after a careful investigation along the newest lines for the treatment of the disease. It has grown to such large proportions, especially in congested districts of large cities, that it has become a matter of the greatest importance to meet it, and, as far as possible, suppress it. This is being done; first, by systematic education in the houses of the poor; secondly, by a separation of the moribund cases from the hopeful cases, and, thirdly, by what is known as the outdoor treatment for cases that are hopeful.

Cottages for the Insane.—The cottages for the insane represent the newest type of hospital treatment. They are large, sunny and airy, and are without the prison-like bars on the outside of the windows. The living rooms are separate from the dormitories, and in all respects the cottages look like and are conducted much like private residences. These three cottages are connected by an ornamental colonnade. They are of pleasing architecture, and they make an ornate head for the avenue of cottages at the Dunning institutions.

Employment of the Insane.—In addition to the three new cottages, the large farm cottage is now nearing completion. This is designed for patients who are able to work on the farms. It is supplied with all modern facilities, including shower baths, and is really a part of the new treatment for the insane people, which provides moderate employment for them instead of forcing them to remain idle.

Laboratory Building Under Erection.—Still another building at Dunning is now under erection, the foundation already being in, to provide adequate morgue facilities and room for the pathological laboratory and for clinical lectures. The lectures will be conducted in an amphitheater. The facilities afforded in this building will attract students of medicine and will also cause experts in various diseases treated there to visit the institutions to lecture to doctors, internes and attendants, and in that way improve the medical service to the poor.

Children's Building.—Work has begun on the Children's Building at the County Hospital. This will be a large, roomy, fireproof structure, built on the most modern lines for the treatment of sick children.

New Ophthalmological Journal.—*Ophthalmology* is the name of a new quarterly journal, the initial number of which will appear October 1, 1904. As the title indicates, it will be an ophthalmic periodical of about 250 pages, devoting about one-third of each issue to original essays, the balance to abstracts of original articles appearing in domestic and foreign literature, also complete book reviews. The following well-known opthalmologists and editors are in charge of the various departments: Dr. H. V. Wurdemann, Milwaukee, managing editor and publisher; Dr. Nelson M. Black, Milwaukee, assistant editor; Dr. Charles H. May, New York City, American and English literature; Dr. Casey A. Wood, Chicago, Italian literature; Dr. Charles A. Oliver, Philadelphia, and Dr. Blencowe E. Fryer, Kansas City, French literature; Dr. Albert B. Hale, Chicago, Spanish and Portuguese literature; Dr. Edmond E. Blaauw, Buffalo, Dutch literature; Dr. Charles Zimmermann, Milwaukee, and Dr. William Zentmayer, Philadelphia, German literature; Dr. J. Guttman, New York City, Hungarian and Austrian literature; Dr. Frank Allport, Chicago, British colonial literature; Prof. Dr. M. Wicherkiewica, Cracow, Austria, Polish, Russian and Scandinavian literature; Dr. Mitsiyasu Inouye, Tokio, Japan, Japanese and

Asiatic literature; Dr. Claud Worth, F. R. C. S., London, Eng., English literature.

War on Consumption.—The secretary of the Illinois State Board of Health, Dr. J. A. Egan, has just issued a circular on "The Cause and Prevention of Consumption." The circular is written for the layman, not for the medical man, and it is designed as a plain and practical talk to the consumptive on how he may regain his health and how he may prevent conveying the disease to others; to the healthful man on how he may avoid acquiring the disease himself and how he may appreciate the physical conditions which indicate the threatened invasion of the disease; to members of families of consumptives, advising them as to how they may properly care for consumptives with little danger to themselves and how they may safely continue to live in houses in which consumptives have lived or died, or even sojourned.

No better excuse for this circular need be given than the statement that in 1903 over 7,000 people died from this one disease in Illinois, more than died from typhoid fever, diphtheria, scarlet fever, all forms of bronchitis, influenza, whooping cough, measles and small-pox combined, and that of all these deaths consumption is the one great enemy of the man in the prime of life, killing, without respect to manner of life or social condition, at the age when man is of the most value to his family and to the State. Of the 7,000 dead from consumption in 1903 in Illinois 4,500 died between the ages of twenty and fifty years. In the prevention of consumption the circular especially points out the fact that the spitting of consumptives is the chief source of infection and it urges strongly that healthful persons should not spit in public places or on floors and that they should not permit others to do so. Other important advice in the matter of prevention is: "Don't wear skirts which sweep the infection of consumption from the sidewalks into your homes. Don't put in your mouth things that are promiscuously handled by others. Don't fail to wash your hands before you eat. Don't drink from a glass, cup or vessel used by others unless it is carefully washed. Don't live, sleep or work in a room where there is no fresh air. Don't neglect a cough or cold." Such circulars are useful and might be distributed widely by other State health boards to advantage in the now well-recognized state of "War against Tuberculosis."

GENERAL.

Physicians in Cuba.—Physicians are scare in Cuba; $316,000 worth of patent medicines were imported during the fiscal year 1902-1903, mostly from France.

Five Millions for Hospitals.—What Londoners spend annually on doctors will probably never be known. But the report annually issued by the Metropolitan Asylums Board shows that they expend more than a million a year on the public treatment of imbeciles, the infectious sick and the incidental establishment charges. Moreover, the sum, like the population, is annually increasing. Last year it was £1,123,130 (equal to a rate of 6.65d. in the pound), in 1902 it was £1,013,120, or a rate of 6.08d.

New Hospital for Orange.—Bishop O'Connor has authorized the Rev. F. Victor Romanelli, rector of the Italian Catholic Church of Our Lady of Mount Carmel, to open a hospital for patients "irrespective of race, religion or color." The institution will be under the care of the Sisters of the Most Precious Blood, and will be known as Mount Carmel Hospital.

Rocky Mountain Interstate Medical Association.—The next regular meeting will be held at Brown Palace Hotel, Denver, Col., September 6 and 7, 1904. The following preliminary program is announced: W. W. Grant, Denver, Complications and Sequelae of Appendicitis; S. C. Baldwin, Salt Lake, Hip Joint Disease; John C. Munro, Boston, Report of Cases of Operation Upon the Lung; D. S. Fairchild, Des Moines, Pregnancy Complicated by Tumors of the Uterus; Charles H. Mayo, Rochester, Minn., Peritoneal Tuberculosis; James R. Arneill, Denver, "Hyperchlorhydria," A Common Expression of Neurasthenia and Allied Conditions; J. N. Hall, Denver, Report of Eight Cases of Pernicious Anemia; A. C. Ewing, Salt Lake, Typhoid Fever; George H. Stover, Denver, X-Ray Treatment of Urethral Carbuncle; A. A. Kerr, Salt Lake, Ectopic Pregnancy; George C. Stemen, Denver, Shock; Edward C. Hill, Denver, The Chemistry of Drug Action. One and one-fifth fare for the round trip in Colorado has been obtained and proportionate concessions for outside States are expected.

National Jewish Hospital for Consumptives.—The National Jewish Hospital for Consumptives, in Colorado, has just completed another fiscal year, during which it cared for 165 patients of all creeds and from every section of the Union. Since its establishment in 1900 it has cared for 554 consumptives, the larger percentage of whom left the institution either cured or much improved. At present the facilities of the hospital are taxed to their utmost, and there is need for an enlargement of the institution, which is free to patients.

Japanese Surgeons and the War.—An interesting article appears in the *Deutsche Medicinische Wochenschrift*, which is abstracted by the *Evening Post*. The author is Dr. Wada, a surgeon in the Japanese navy and chief medical officer of the Red Cross Hospital at Chemulpo, in Korea; his patients were Russian sailors wounded in the naval battle of Chemulpo, where the Korietz and the Variag were destroyed. Of the Russian crew 100 were wounded, the majority being taken on board the French cruiser Pascal and the others on board British and Italian men-of-war. The wounded Russians at first declined to leave the French ship, but eventually twenty-four of them were taken ashore. They told the Japanese surgeons that the hospital arrangements on board the Russian ships were very defective, and that there were only five hospital beds for a crew consisting of 26 officers and 556 men. The Russian medical officers, they declared, were so perplexed by the suddenness of the action that they could scarcely attend to the wounded, and the chaplain was intoxicated during the battle. Moreover, the conditions experienced on board the French vessel were not of the best, the patients being placed in a small, damp room and supplied with inadequate food. The condition of the sufferers confirmed this account, for some of their wounds were gangrenous. Dr. Wada says that the Japanese shells exploded when they touched water or the human body and burst into 1,000 small pieces without evolving noxious gases. In most cases the fragments of shell had been removed by the French medical officers, but there were a few patients from whom Dr. Wada withdrew pieces of iron of the size of a small finger. The wounds were nearly all complicated by fractures of the bones, but there was only one instance in which a fragment of shell was found in a bone. The Japanese showed more courage than the Russians.

Medical Training in Japan.—Among the students at Roanoke College, Virginia, in 1889-90 was Hidel Fukuoka, a son of Viscount Takachika Fukuoka, a member of the Imperial Privy Council of Japan and ex-Minister of State for Education, writes a correspondent to the *Evening Post*. One day this young man handed me a copy of the English edition of the catalogue of the Imperial University of JaJpan at Tokio for the session of 1887-88. I examined this catalogue with a great deal of interest. I observed that in each of the six faculties of the university there were professors, native and foreign, who had won the degree of doctor of philosophy from the leading universities of Europe and America. I was especially struck with the advanced character of the College of Medicine, which had a required course of four years of ten months each, when at that time I believe no medical school in our country required more than three years for graduation. After completing the required course of four years, candidates for the degree of doctor of medicine are required to spend some months of the following session at the university to take their examinations. This ordeal covers in all twenty-five days, the examinations being conducted by a committee of the medical faculty. Each candidate is required to diagnose and treat from day to day several cases in the various hospitals of the university. With such thorough and practical training as that, is it any wonder that the field hospitals of the Japanese were highly successful during their war with China? The experience gained then has enabled the Japanese surgeons to make their hospitals even more efficient during the present conflict with Russia.

English Public Houses and Tuberculosis.—The London *Lancet* speaks authoritatively on this subject as follows: "That the public house is a fruitful source of infection by the tubercle bacillus is well known, and the returns of the English registrar-general show that public house servants are specially prone to be affected by pulmonary tuberculosis. This is not to be wondered at when one considers that the floor of the lower class of public house is covered with sawdust which in great measure is impregnated with sputum. This dust dries and is constantly being stirred up by the feet of drinkers. Not only are barmen and barmaids and the customers of the house thus exposed to infection, but the unhappy children who are brought into the house by their mothers are likewise in danger. The public house is the poor woman's club where she can discuss with her neighbors social and domestic incidents; the children cannot be left at home, and so they sit on the public house floor during their mothers' gossip time. Only the other day, passing a large public house in one of the main thoroughfares of St. Luke's, we noticed through the open door of a public bar several slatterly women drinking at the counter, while crawling on the floor of the bar and rubbing their hands in the sawdust with which it was strewn were two babies of from eighteen to twenty-four months old. That this is not an uncommon occurrence those who have occasion to visit poor and squalid neighborhoods well know, and in the light of such facts is it to be wondered that the race is said to be degenerating or that medical science should have such a hard uphill fight with disease? Granting that these children, probably the offspring of degenerate beings, become infected with the bacillus of tubercle, the environment in which they live will necessarily be a potent factor in the development of pulmonary tuberculosis, and not only will they themselves suffer, but they will also involve the public in great expense for their subsequent treatment and keep. Recently a law has been passed to prevent children under a certain age from obtaining intoxicants, and there is legislation for the prevention of cruelty to children, but as yet there is no law to prevent ignorant mothers from leaving their offspring to play on the disease-laden floor of a public house. Efforts are being made to inculcate the precepts of hygiene at an early age, and many publicans, notably those in the borough of Woolwich, post up notices requesting their customers not to spit. But until spitting on the floor of a tavern is made a penal offence, as it is at present to spit in a tramcar, there is but little hope of amelioration."

OBITUARY.

Dr. F. F. Cassaday, senior practising physician in Frankford, died August 3 of apoplexy. He was stricken the day before while alighting from his carriage. Dr. Cassaday was born in Philadelphia and graduated from Jefferson College in 1867.

Dr. Robert Milbank, sixty-six years of age, a well-known practising physician of 154 West Forty-eighth street, New York, died suddenly on Thursday night of apoplexy. Dr. Milbank was a member of the County Medical Society, the Academy of Medicine, the Society of the Alumni of Bellevue Hospital, the Medico-Legal Society, the Northwestern Medical and Surgical Society and was lately a visiting physician to the New York Infant Asylum.

Dr. Orlando Brown, brevetted brigadier-general for services in the Civil War, and for many years one of the foremost physicians of Litchfield county, Conn., is dead at his home residence in Washington, Conn., aged seventy-seven years. He had been ill several months. Dr. Brown was a graduate of the University of New York and the Yale Medical School. His military career, which was distinguished, began in 1861, when he entered the army as assistant surgeon of the Eighteenth Massachusetts Volunteers. Later he became inspector of hospitals and superintendent of the general hospital at Newport News, Va. He was in charge of the welfare of the colored people south of the James river in 1863, and in 1865 was made colonel of the Twenty-fourth Regiment, United States colored troops. In 1866 he was brevetted a brigadier-general for gallant conduct in the service, but resigned his commission in 1869, and resumed the practice of medicine in this place.

Sir William Mitchell Banks, the well-known surgeon, is dead. He was a Scotchman by birth, but the greater part of his life was spent in Liverpool, and his most notable work was the resuscitation of the Medical School of that city and the foundation of the University College there. He was one of the leaders of the present movement which has for its object the discovery of a cure for cancer. Born at Edinburgh in 1842, Sir William took his M.D. degree at the University of Edinburgh. After acting as Demonstrator of Anatomy at the University of Glasgow he removed to Liverpool in 1866. In 1897, when the British Medical Association visited Montreal, Sir William was president of the Surgical Section, and delivered the address on surgery. He was a Fellow of the Royal College of Surgeons and was knighted in 1899.

SOCIETY PROCEEDINGS.

BRITISH MEDICAL ASSOCIATION.[1]

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

FIRST DAY—*Continued.*

(Continued from Page 285.)

Cerebral Infection.—This was the general topic of the Address in Surgery, by Sir William Macewen, F.R.S., Regius Professor of Surgery in the University of Glasgow. The first point taken up referred to the localization of brain abscess. Prior to the advent of cerebral spinal surgery in its later development, abscess of the brain was regarded solely as of a pyemic nature, occurring by metastasis, and, owing to the aberrant manner in which abscess formed, its localization was regarded as impossible, except in the few instances where abscess happened to occur in parts which gave rise to functional manifestations. Such was the old view, but early observation showed that this view was untenable. It was seen that all brain abscesses arising from the foci within the cranium were, if not in direct contact with such foci, at least in contact with the infected path which lay between the primary focus and the abscess. If the cerebral abscess remains unrelieved and continues to grow, it may by extension implicate other regions of the brain distant from the primary external focus, even then the contiguity of diseased structure is generally traceable. So that, by way of illustration, if one takes intracranial abscess resulting from ear disease, one knows that such abscess will form within a limited area of the middle ear, the particular direction of the extension being determined by the anatomical condition of the parts and the direction of the prior pathological encroachments. The abscess will be found either within the temprosphenoidal lobe contiguous with the infected tissue round the sigmoid sinus or in the cerebrum in touch with the infected path from the tegmen antri or tympani, the pathological processes having generally prepared the way and having left in most instances an easily traceable path. This being correct, it must be apparent in a case of abscess of the brain that preliminary investigation is facilitated and the treatment simplified as access to the abscess in either position may be had by extension of the aperture already made in the mastoid.

Abscess versus Meningitis.—Anatomical features are often secondary determining factors between abscess and meningitis, and in the latter case between localized and generalized lesions. If the access of the pyogenic organisms has been by way of the tegmen or the sigmoid, abscess of the brain or cerebellum is frequent; and if meningitis results, it is at least primarily localized, often the result of a soldering process, does not immediately involve vital structures, and is often amenable to prompt treatment.

Abscess Does Not Occur by Pyogenic Organisms Traveling by Way of Internal Auditory Meatus.—If, on the other hand, the pyogenic organisms have traveled by way of the internal auditory meatus, they occasion leptomeningitis of a serious kind on account of its being basal, early involving the medulla and respiratory centers; and, secondly, on account of its inaccessibility. Abscess of the brain seldom or never occurs by pyogenic organisms traveling by way of the internal auditory meatus. His own persoinal observation had never shown a single instance of such an occurrence, nor would it be likely to occur from the anatomical features of the parts. The brain is kept apart from the original pyogenic focus by the whole length of the internal auditory canal, while the expansion of the brain membranes which ensheath the nerves in the canal dip right into it. The leptomeningitis is thus set up in the canal, and from there spreads over the basal membranes. Collections of purulent matter are frequently in the meshes of the pia and arachnoid, and occasionally they produce a softening and ulceration of the brain surface, but not abscess of the brain.

Patients affected with tubercle of the middle ear, with rupture of the membrana tympani, are subject to secondary pyogenic invasion, which runs a rapid course, the pyogenic organisms finding abundant pabulum for their development.

Miliary Tuberculosis from Middle Ear Through Sigmoid Sinus.—Another mode by which tubercle of the mastoid may become a menace to life is by dissemination through the sigmoid sinus to other parts of the body. On many occasions, tuberculous masses of granulation tissue issuing from the mastoid have surrounded the knee of the sigmoid sinus and in a number of the lumen of the sinus has been invaded by the tuberculous granulation tissue.

Reflexes.—The author then spoke of the influence of anesthetics on the reflexes and the persistence of many of the genital reflexes, even under the influence of profound anesthesia.

Cauda Equina Lesions.—Operations were performed in two cases which came under observation of lesion in the lumbar region implicating the cauda equina. Both were affected with pudic paralysis, and in one the anesthetic area extended to the back of the thighs and the soles of the feet, showing the further implication of the second and third sacral nerves. These operations resulted in the restoration of function of the bladder and rectum in both, and of sexual power in one and partial restoration of it in the second. One of the cases was of injury of two months' duration, while the other was of six months, and in the latter the spinal canal was found partly filled with a fibrous tissue mass in which the cords of the cauda equina were adherent on their posterior aspects.

The Voice and the Pudic Nerves.—In two cases where the pudic nerve was affected, among the minor defects attending their condition the patients asserted that their voice had altered since their injury. There was no available means of testing the accuracy of this statement, though one of the patients operated on remarked, some time after the restoration of the pudic functions, that his voice had regained its original "fulness." Doubtless the restoration of the bodily tone and vigor would have an effect upon the voice apart from any direct nervous influence through the vagus to the laryngeals. The assertion on the part of the patients, however, awakens the thought of the possibility. The effect of early castration is well known to produce an imperfectly-developed larynx and a high-pitched voice. But the spermatic plexus is totally different in origin from the pudic, being derived from the sympathetic through the aortic and renal plexus. It is possible that, among the fundamental changes induced by castration, the one affecting the larynx may pass through the pudic nervous mechanism, which must also suffer from the want of development?

Suture Materials.—He then took up the subject of suture materials. The aim in choice of a ligature should be to obtain one which would accomplish the first two objects—namely, to produce a solution of continuity of the internal coat of the vessel and to main-

1 From advance sheets of the *British Medical Journal*, by courtesy of the editors.

tain the parts in apposition for a time sufficient to enable the living tissues to accomplish the organic union of the vessel wall; and thirdly, having accomplished these two former objects, to permit itself to be speedily removed from the tissues without disturbance, its place being taken by a new formation of living connective tissue which would further strengthen the occlusion of the vessel at the part ligated. Asepticity is by many considered the sole requirement in a ligature, otherwise mechanically suitable, but asepticity is only one of the requirements. A further requirement which a ligature ought to possess, is that it will remain in the tissues for a time sufficient to effect its purpose. and which will then be capable of rapid elimination. The same desiderata are required for sutures. A material capable of maintaining the tissues in contact, sufficiently strong to enable the tissues to proliferate and to effect a living union of the parts is required, and after this has been accomplished this suture material ought to become eliminated without disturbance of the parts. So that when the mission of the suture has been accomplished, it should no longer remain in the tissues, a useless dead material capable of producing irritation, but should permit itself to be speedily removed.

Some conceive the idea that it would be good to have a material by the aid of which the parts could not only be brought together, but one which would maintain them in permanent apposition. Such physical union is readily produced between two inorganic substances, such as two plates of metal, but it cannot be obtained between two pieces of living tissue. Living tissue can only be made to adhere permanently by a living bond of union. A suture of dead tissue can only secure coaptation of two living surfaces for a limited period—a period sufficient, in the majority of instances, to enable the living tissues to become united. When such union fails to be produced from any reason the living tissue gives way by absorption in front of the pressure exerted by the dead suture. This absorption goes on until there is no more traction by the suture—until a position of rest is obtained when the suture lies loose in the tissues. When this stage has been reached the dead suture is of no further service—it remains at best a useless foreign body, which, if encapsulated, may be innocuous; but its presence among tissues subject to movement is often a source of irritation, and sometimes of danger, to the neighboring parts (as in hernia). It is sometimes extruded from the tissues by a process of molecular disintegration occasionally associated with abscess formation. He deprecated the use of wire ligature material.

From the foregoing it must be evident that the material to be used for ligatures and sutures, besides being physically fitted to perform its function, requires to be rendered aseptic, and, further, requires to comply with a physiological test. First, it must remain intact in the tissues until its object be accomplished; and, secondly, after that has been attained, it must permit itself to be quickly removed by absorption. Sterilized silk is practically non-absorbable. It resists the action of the tissues for a very long period—years—and is frequently extruded. Silkworm-gut and hair are proof against absorption, and have been removed from the tissues five and seven years after their introduction, and were at the end of that period found to have preserved their smooth surface quite intact. Tendons of deer and kangaroo, though absorbable, resist the action of the tissues for many months. One knows how difficult it is to promote absorption of a sloughed tendon exposed in a wound. Long after the surrounding soft tissues are ready to unite, they are retarded from doing so by the presence of dead tendon. Catgut is one of the best substances generally available for sutures and ligatures, but care ought to be exercised in choosing good material. For ligatures and sutures raw catgut ought to be selected, preference being given to such specimens as present the best physical properties and show that care has been bestowed on its manufacture. It must be evident that the subsequent preparation does not remedy physical defects originally in the gut. such as want of strength, or roughness. The gut must not be hardened in such a manner as to prevent leucocytal penetration. otherwise it will be too resistent, and in this way may be no better than silk or wire.

Dr. Macewen then discussed in detail some of the procedures in the preparation of various forms of catgut, and spoke of the causes of retardation of absorption.

(To be Continued.)

NEW YORK ACADEMY OF MEDICINE.

Section on Pediatrics.

Stated Meeting, held Thursday, April 7, 1904.

The President, Andrew H. Smith, M. D., in the Chair.

The scientific business of the evening consisted of a symposium on methods of infection in tuberculosis, with special reference to children, and was held under the auspices of the section on pediatrics.

Modes of Infection in Tuberculosis.—Dr. Philip S. Sabine discussed the possible modes of infection and suggested that at certain ages particularly people were more susceptible and that infection seemed to occur more readily. For this reason, as pointed out by Dr. Jacobi, the tuberculin treatment had never been a success in children suffering from tuberculosis. Direct inoculation with tuberculosis Dr. Sabine considers not to be so rare as is sometimes thought. Genito-urinary infection with tubercule bacilli occurs directly through coitus and, in Dr. Senn's opinion, is not infrequent from this cause. The frequency with which tuberculous epididymitis occurs in the male, shows the danger to which the female is exposed from this cause. In butchers, anatomists and workers in laundries, direct contagion through wounds with tubercle bacilli is not infrequent. In four reported cases, skin tuberculosis has developed in tattoo marks. In three of these cases the tattooer was actively tuberculous and in the fourth case the person tattoeed was so.

Circumcision Tuberculosis.—There are many cases of tuberculosis reported as occurring in the wound made for circumcision. The old rubrical method, according to which the bleeding was stopped by pressure with the lips, is undoubtedly the reason for the frequency of this form of tuberculosis. It is very evident then that the saliva of persons suffering from tuberculosis may constitute a source of skin tuberculosis, if it should be brought in contact with open wounds. Under almost corresponding circumstances a number of cases of tuberculosis have been reported as occurring in children in whom efforts at resuscitation were made by direct mouth to mouth inhalation. Other forms of direct inoculation of tubercle bacilli into the skin have been reported from wounds made by spittoons, and in four cases reported Czerny as the result of skin grafting. This form of inoculation is not, however, very frequent since of 160 workers, in an abattoir only seven had lesions of this kind. It seems very clear, however, that fingernail abrasions may cause tuberculosis of the nose.

Adenoids seem to be especially liable to infection either from the finger or from instruments used in their removal. This seems to be due to a lack of resistive vitality on the part of the spongy material present.

Diffusion from Sputum.—There is no doubt

that bacilli are diffused into the air on minute particles of sputum during coughing, and even during talking. Experiments have been made which show that even during talking bacilli may be projected as far as a meter from the patient's mouth. Such diffusion does not occur when the sputum is thick, but only when it is rather thin and free. It only takes a few minutes to cause infection of a room. The bacilli thus projected into the air on expectorated material have been found in various experiments to be still some distance from the floor at the end of from fifteen minutes to three to five hours. During rapid talking sputum is more freely projected. Certain persons seem to project much more than others. While it is assumed that inhalation tuberculosis is a thing of very frequent occurrence, it is not easy to understand how tubercle bacilli can be breathed into the depths of the lungs on dust particles or little spherules of sputum material. Jonathan Wright, of New York, the distinguished laryngologist, insists that inspiration tuberculosis is practically impossible except where people are mouth breathers. Air is carried through the moist intricate passages of the nose and then must pass the narrow apertures between the true and the false vocal cords. These moist surfaces are almost sure to entangle any foreign particles that may be present. The air in the depths of the lungs is changed not by direct currents of air that flow in and out, but by diffusion in the trachea and larger bronchi, so that it is very hard to understand how tubercle bacilli should find their way into the air vesicles. If inspiration tuberculosis were so common as it is then infection would take place mainly at the bases of the lungs, since most of the tuberculous material would find its way downwards by means of gravity. Once dust particles get beyond the trachea, if they become entangled in mucus they are certainly not likely to find their way upward against the force of gravity into the apices of the lungs, where initial lesions of the pulmonary tuberculosis are most common, but would be almost sure to find their way downward at least as frequently, which is not the case in practice.

Method of Infection.—Dr. Rowland G. Freeman said that the method of infection in tuberculosis is, of course, extremely important. Considering how much study has been devoted to the disease, it might be thought that this problem would now be definitely settled. Professor Koch, however, considers that infection through the intestinal wall is very infrequent. Professor von Behring, on the other hand, considers that infection, even through a healthy intestinal wall, is not only possible, but the most frequent method. When two such great authorities differ, the question is evidently open for discussion. The bronchial glands are so often affected as to show the frequency with which infection must take place through inhalation. Whether infection may take place through food, or not, there is a diversity of opinion. In New York it is considered to happen very rarely. In Europe, both in England and on the Continent, a very different opinion prevails. Guthrie found over 22 per cent. of infections through the intestinal tract. Still reported over 23 per cent. Heller, of Kiel, reported nearly 40 per cent. of primary intestinal affections. This seems to be the prevailing German opinion. Conheim and Aufrecht consider that infection through the intestines is by no means rare, but rather frequent. Dr. Sims Woodhead has recently stated that the mesenteric glands are nearly always infected.

Intestinal Permeability.—It would seem from recent observations that in animals, at least, infection through the intestinal walls may take place in such a way as to give the principal lesions in the lungs. Lung lesions that occur as the result of infection through the intestinal tract need not necessarily come from food. It may be the result of the swallowing of dust. Von Behring has shown that at least in young animals tubercle bacilli may pass through an uninjured intestinal membrane, producing lesions in the intestinal glands, or even at some distance from the intestinal tract. When there is generalized tuberculosis, the seat of infection seems nearly always to be the intestines.

Tuberculosis and Emaciation.—The nutrition of children suffering from tuberculosis is usually not very seriously disturbed. Emaciation always speaks against tuberculosis in young children, and rather for intestinal disturbances of other kinds. Very often the occurrence of tuberculous meningitis is in children in whom nutrition is excellent. Tuberculosis acquired very young in life may become incapsulated and later take on renewed infectious qualities. This not uncommonly happens after some other infections, as for instance measles, especially measles complicated by bronchopneumonia or whooping-cough or grip. This form of reinfection may even cause a generalization of tuberculosis or may set up a fatal tuberculous meningitis. Infection of the cervical lymph nodes, or of the joints seldom occurs under three years of age. These infections of course must take place as a rule through the circulation, so that it would seem that the entrance of tubercle bacilli into the circulation is rare in the early years of life. Abdominal infections with tuberculosis occur most commonly during the period when cow's milk is an almost exclusive article of diet, and would seem to indicate that bovine tuberculosis is pathogenic also for man. Whatever may be the port of entry of the tubercle bacillus, the bronchial glands and the lungs soon become involved.

Bovine and Human Tuberculosis.—Dr. Maczyk Ravenel, of Philadelphia, discussed the relationship between human and bovine tuberculosis. He said that if this discussion had taken place shortly after Koch's announcement of the absolute diversity of human and bovine tuberculosis, he could only have asserted his belief of the contrary and confirmed it by citations from literature. Now, however, as the result of observation made since Koch's announcement, he is definitely sure that there is not the immunity of human beings to bovine tuberculosis that Koch claims. Koch's principal argument is that bovine tubercle bacilli are always extremely virulent to animals, while human bacilli are not so virulent. It has been shown in Germany, however, that true bovine bacilli may possess but slight virulence. Dr. Ravenel himself has succeeded in isolating bacilli from human beings, that had all the characteristics of human bacilli with their special virulence, in certain cases, though lacking it in others. It has been found that bacilli, especially if existing in fat droplets, may readily pass through the intestinal wall even though the mucous membrane is uninjured. Dr. Ravenel's observations in this matter were made upon dogs. The animals were first purged by means of castor oil, so as to leave no foreign material in the intestines. Then, after being allowed to fast for twelve hours, they were fed with butter, into which had been introduced tubercle bacilli from cattle. Four hours after their meal they were killed. In eight out of ten such cases, bacilli were found to have passed through the intestinal walls. These bacilli, when injected into guinea-pigs, killed them in a comparatively short time. This was evidence that a large number of the bacilli must have passed through since ordinarily the length of time necessary to kill an animal depends upon the number of bacilli that are originally injected. In these cases bacilli were found in the thoracic duct and in the lungs, and the observations proved that though the infection takes

place through the intestine, it may show itself very markedly in the lungs.

Other Points of Entry.—The tonsils are undoubtedly sometimes a port of entry for tubercle bacilli, and these may be derived from the food. Friedmann found that in tuberculous subjects the tonsils are infected quite commonly, if careful investigation of this subject is made at autopsy, and that many removed tonsils show the existence of foci of tuberculosis. These that are derived from the food may not infrequently be bovine tubercle bacilli and show the characteristic features of this germ. Where infections of the mesenteric glands alone were found in Dr. Ravenel's own experience, two out of five of the cases showed the presence of bacilli having such decided virulence that it could only be concluded that they were genuine bovine bacilli. De Schweinitz showed this same thing to be true in two out of four cases under his observation. Theobald Smith found this special virulence to be present in one out of five cases. Schmitt, in Germany, has recently reported his observations on 16 cases of mesenteric tuberculosis, in four of which the bacilli present seemed to be of bovine origin. It is even possible that affections of the bronchial glands may be due to bovine tubercle bacilli carried into the lungs after having been emptied first into the veins from the thoracic duct.

Danger of Bovine Tuberculosis.—Dr. Ravenel does not attempt to say how many cases of tuberculosis in children are due to bovine tubercle bacilli, but of their pathogeneity for man there can now be no doubt. Bovine bacilli occur not only in the milk of cows suffering from tuberculosis of the udder, but also in such as have tuberculous affections in other parts of the body. Ravenel himself has recently found that if the milk of five cows were mixed, one of them having been proven tuberculous, though not to a marked degree by the tuberculin test, such milk when injected into guinea-pigs gave 15 per cent. of positive results. This has been confirmed by German observers. From bovine tuberculosis then the human infections constitute not a small number, and children should be guarded against the use of such products.

Heredity and House Infection.—Dr. Biggs discussed the subject of susceptibility and heredity, and said that as tuberculosis usually occurs it is a question rather of house infection than of direct inheritance. It is possible that a specific susceptibility to the disease may be inherited. In a tuberculous family, however, a child is exposed to infection almost from the first moment of its existence. It is kissed and fondled by the members of the family and may be infected with the disease and sometimes even a tuberculous mother will pass some of the food from her own mouth into that of the child. The cooling of milk foods in this way is not uncommon. Later, when the child begins to creep its hands become soiled with expectorations on the floor and it gathers up the dust which frequently contains tuberculous germs. Besides this, owing to its position so close to the floor, it breathes in the dust that is raised up by every movement through the room, and thus is likely to inhale the germs of tuberculosis.

Infection and Latent Tendency.—If the child becomes infected it may later recover, the lesion being incapsulated. Whenever, later on in life, however, there is any running down in health, this incapsulated focus of tuberculosis may become active again. This may constitute the hereditary tendency that to some minds is supposed to exist so clearly, and modern research seems to point in this way. The most important thing for the decrease of tuberculosis is the protection of children in every way and the lessening of the disease during the early years. Dr. Biggs then showed by statistics of the mortality from tuberculosis of New York city that there had been, in recent years, a very decided decrease from the death rate of tuberculosis under the age of fifteen years. This he considers the best feature of the crusade against tuberculosis and believes that it should be encouraged in every way. If there is to be an eradication of the disease it will come thus more surely than by any other means.

Entrance by the Lungs.—Dr. Thomas Darlington, of the New York Board of Health, opened the discussion of the papers. He considers that the entrance of bacili by the lungs must be admitted. Notwithstanding the very complete protective mechanism of the lungs, dust and fine particles of various kinds find their way deep into the air spaces of the pulmonary tissue. While acting physician to the Croton tunnel work Dr. Darlington found at autopsies of men who died during the progress of the work, that dust of various kinds from the quarrying and the explosions had found its way into the farthest portions of the lungs. On the other hand, he considers that tuberculosis may certainly develop from food materials, and especially from milk. It is not an infrequent experience for a physician to note persistent diarrhea in a patient and then have phthisis develop, especially in young patients.

Human and Bovine Tuberculosis.—Dr. Darlington has seen cows that fed on pastures over which the tuberculous patients of a sanitarium were accustomed to walk without proper precaution as to expectoration develop tuberculosis apparently as the result of the swallowing of tuberculous material with the grass. Food material may also prove a source of tuberculous infection, or through carious teeth. It is from these ports of entry especially that cervical lymph node tuberculosis is apt to develop and may prove a medium of further infection.

Care for Children.—For the restoration of adults suffering from tuberculosis to health it has been suggested that removal to sanitoria may constitute the best means. If adults are to be sent away from an infected home and poor surroundings, so much the more necessary is it that children should be treated in this way. It is wonderful how rapidly children improve, though there are many little patients who suffer so much from homesickness that any improvement is out of the question. On the other hand, mothers are loath to let sick children go. Well children they are satisfied to part with. If they stay they are sure to be a source of infection for other members of the family, since an ailing child is more kissed and fondled than even a well one. The question of homesickness has never been properly realized as a factor in mortality statistics. Dr. Darlington has seen an epidemic of measles with 36 patients, 18 of which died, because, when ill, they felt the need to see familiar faces and called for them frequently. This was true even when the children came to a country home only from an institution in the city. They were homesick for their old surroundings, for the nurses with whom they had been brought up. For the sanitarium treatment of children then it will be necessary to have the institutions in close proximity to the city in order that parents may have the opportunity to visit frequently.

Environment Not Heredity.—Dr. Northrup said that scarcely too much importance could be given to the educational value of the work that is being done by the Board of Health. Not long since a woman applied to have her husband removed from the home to the hospital, because she feared that he would be a source of infection. In spite of all her warnings

he insisted on being careless with regard to expectoration and she wanted to avoid the danger for the children particularly. It seems to be becoming clearer that it is not a question of heredity, but entirely one of infection that is at the bottom of the development of tuberculosis. Dr. Northrup once saw tubercle bacilli demonstrated in the circulation of a fetus that had been cut from its mother who was dying from tuberculosis by Cæsarean section. It seemed not impossible, however, that they might have been milked into the child's circulation owing to manipulations during the operation. It is certainly a rare curiosity for children to be born with tuberculosis and the rôle of heredity is assuming ever smaller proportions.

Intestinal and Respiratory Tuberculosis.—Dr. Northrup considers that it is rather easy to overestimate the importance of intestinal tuberculosis and to underestimate that which has its rise through the respiratory tract. In children the examination of the bronchial glands and the determination of their condition seems to be the crucial test of the mode of entrance of tubercle bacilli. In Dr. Northrup's own experience of 125 autopsies, every one showed the bronchial glands affected, apparently as the result of primary pulmonary tuberculosis. Only one showed such an involvement of the mesenteric lymph glands as pointed to an infection through the intestinal tract. With regard to experimental observation, the conditions established for purposes of experiment were so different from those of nature as to make the conclusions unusuitable. If tuberculosis material is forced into an intestine it is not surprising if it finds its way through the mucous membrane into the mesenteric glands, or even the thoracic duct without producing other manifestations. This must not, however, be considered as evidence of the passage of tubercle bacilli, through the intestinal mucous membrane.

Tuberculosis of the Cervical Lymph Nodes.—Dr. Dowd said that it is very probable that tuberculous infections take place, both through the intestinal and the respiratory tract, and that infections through the intestinal tract are more frequent than have been thought. It is interesting to realize, however, what little tendency tuberculosis has in certain forms of infection to spread beyond the original focus. Of 100 cases of tuberculosis of the cervical lymph nodes that Dr. Dowd has treated surgically only one has so far developed tuberculosis of the lungs. Other cervical lymph nodes have become infected and the infection has even spread to the other side of the neck, but the lungs have not become affected. Out of 1,000 surgical cases treated in hospital under Dr. Dowd's care, 212 were suffering from tuberculosis in some form. The overwhelming number of these cases were of bone tuberculosis. At present there is no knowledge of the source from which tuberculosis of bone originates. The infected material must, however, come through the circulation, though it is not frequent to find other lesions of tuberculosis in the same patient.

Localized Tuberculous Infection.—In ten cases under Dr. Dowd's care iliac and femoral glands were affected with tuberculous processes as the result of bacilli finding their way through the lymph passages from slow running ulcers of the feet. These ulcers started in traumata of various kinds, especially as were due to slivers of wood from old floors or portions of kindling wood and the like. Tubercle bacilli were demonstrated in all of the cases. Dr. Dowd considers it rather surprising to find that tubercle bacilli should be so common on the streets of New York that slivers of wood should be capable of bringing about an infection from this form of disease.

Possible Infection Through Mucous Membrane.—Dr. Samuel Hamill, of Philadelphia, said that recent observations have shown beyond all doubt the possibility of tuberculous infection through uninjured mucous membrane. Such a pathological event is not frequent, yet it is certain that it does occasionally occur. The other important fact brought out by recent observation is a sort of corollary of the first and shows that tuberculous lesions may be quite far removed from the original port of entry of the tubercle bacilli, and yet show very little signs of the course they have traveled in reaching the point at which they produce a lesion. Dr. Hamill said that there is no doubt now that tubercle bacilli may pass with the chyle through the intestinal wall into the lacteals, thence to the thoracic duct and finally into the superior vena cava, and from here the distance through the right heart to the lung is not far. While lesions of the thoracic duct have been found they are not frequent. Very few of those who make autopsies will be able to say definitely whether the thoracic duct was affected or not, since usually it escapes all notice, and it is only in recent years that this subject has been investigated. Lung infection from the intestines, however, without any intermediate lesions from the intestine, is not only possible, but seems actually to occur much more frequently than has been thought. With regard to general tuberculosis in infants, Dr. Hamill is of the opinion that these cases may be due to bovine tuberculosis, because of the special virulence which this form of the bacillus has for human beings and other animals.

Infection from Cattle.—Dr. John H. Girdner said that in his own observation cases of tuberculosis seem to develop for which the only source of infection that could possibly be blamed was tuberculous material from cattle. The cases occurred in a mountainous district where there was very little dust, and where for miles there were no sufferers from tuberculosis. Human infection could absolutely be excluded. The patients lived almost exclusively on dairy products and the cattle from which these came were the scrub mountain cattle, thin and scrawny, that had been inbred for many generations. The breed was degenerate and there were evidences of tuberculosis in some of them. Under such circumstances it seems very probable that there can be an actual transfer of the tuberculosis from the cattle to human beings. This may not be frequent, but it constitutes a source of danger that must constantly be guarded against and with regard to which Koch's announcement by his tendency to allay suspicion is likely to do much harm.

Intestinal Infection.—Dr. Ravenel, in closing the discussion, said, in answer to Dr. Northrup's objection that the animals in his experiments were injected directly into the bowels with large cultures of tubercle bacilli that this was never technic. In the cases that he had reported nothing contrary to the ordinary course of nature was permitted. The animals were compelled to fast for twenty-four hours, were given a purge to remove materials that might be present, and then were given a simple meal of fresh butter, which they ate with great avidity and digested rapidly; the fat droplets, however, in the course of absorption, carrying the tubercle bacilli through the intestinal walls.

Chinese Made Easy.—It may come as a surprise to many physicians, particularly of New York, that an accomplished Chinese scholar is in their midst. Fortunately Dr. Walter Brooks Brouner has tried to spread the knowledge gained by many years of hard work. We hope to soon present a review of his interesting book.

NEW YORK ACADEMY OF MEDICINE.

Section on Genito-Urinary Diseases.

Stated Meeting, held April 20, 1904.

The President, James Pedersen, M.D., in the Chair.

Anuria Due to Obstruction of Both Ureters by Calculi.—Dr. A. V. Moschcowitz presented a man, forty-eight years old, who had been admitted to Mt. Sinai Hospital November 25, 1903. Five years before he had an attack of pain in the right side of the abdomen. Since then he had been in fairly good health except for repeated attacks of lumbago. On November 16, 1903, he complained of rather severe pain in the left side of the abdomen. Six days later he voided his urine voluntarily and then did not void any for three and a half days, or eighty-four hours. When he was admitted to the hospital, November 25, his bladder was found to be empty and there was a urinous odor about the patient. In view of the fact that there had been pain upon the left side and again upon the right side some time previous a diagnosis was made of complete anuria of calculous nature. The patient was in fair condition, so that a double nephrotomy was indicated and performed. The result of the operation verified the following: There were no calculi or foreign body in either kidney; the perineal fat on the left side was edematous; the left kidney contained cloudy urine; the right kidney contained pus and urine mixed; a bougie introduced into both ureters revealed an obstruction approximately 6½ or 7 inches from the skin incision down in the ureter. The kidneys were drained and the patient placed in bed. The next day the patient felt very comfortable and both kidneys secreted urine; in fact, the patient laid in a pool of urine in the bed. December 29 the condition of the patient was such that Dr. Moschcowitz thought of going further and relieve or cure the patient completely. At that time he bent a tube at an angle and introduced it into the pelvis of the kidney; through this tube a bougie was introduced into both ureters and then there was found an obstruction on the left side about seven inches from the skin incision and, on the right side, about six inches from the skin incision. The cystoscopic examination was very interesting. The bladder contained but very little fluid and this examination was quite difficult. The right ureter was seen as was the left. This examination revealed a white roundish body which was thought to be in the mouth of the ureter and was believed to be an impacted calculus in the left ureter. The skiagraph picture was not satisfactory. In view of the fact that there was believed to be something in the mouth of the left ureter, which the doctor took to be an impacted calculus, a suprapubic incision was made on January 4, and he was very much surprised not to find any. The incision then made was utilized for the introduction of a catheter into both ureters until they met with obstructions. Immediately he made an extraperitoneal incision upon the right side of the abdomen, exposing the ureter, which was found to be enlarged and thickened. Just above the linea arcuata a large stone was found obstructing the ureter; this was extracted and the incision in the ureter sutured with catgut and the opening in the abdomen closed by layer suture after introducing a cigarette drain. There was no shock following the operation. On the day following four and a half ounces of urine were voided. Two weeks later the same procedure was performed on the opposite side, the operative steps being practically the same. That is, the ureter was exposed, incised, and in this case the obstruction was found below the linea arcuata in the form of a calculus. It was with difficulty extracted, but by gentle massage it was pushed upward and withdrawn. The patient made a complete recovery, and there was no leakage from either side. The second operation was performed on January 18, and the patient left the hospital on February 10. Both kidney incisions had healed kindly. Today he had a sinus which led down beneath the skin and no doubt will close very soon

Dr. Joseph A. Blake said that he had found a very good way of stripping the stone along the ureter into the field of incision was to take a ringed sponge forceps and stroke the stone through the ureter toward the incision. In his hands this was better than using the finger, inasmuch as the ring caught and controlled the stone even through the wall of the ureter.

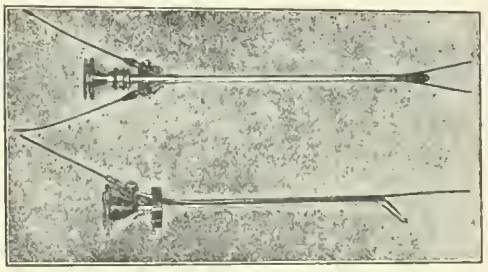
Dr. F. Tilden Brown said that the distention of the pelvis gave an indication of a longer or shorter retention of calculi. He asked if it would not have hastened the operative procedure which was finally made in the abdominal region if the ureter catheter had at once been passed up each ureter until it met with the point of obstruction or lodgment of the calculi? Then, without resorting to nephrotomy, to have made an ureteric incision and there removed the calculi. But the brilliant result in this unusual and critical case leaves no room for any criticism.

Dr. Moschcowitz was under the impression that five years ago when the patient had the severe attack of pain supposed to be due to appendicitis, it was due to the downward passage of the calculus and which, at that time, blocked the ureter. To him it was a great point of interest to know how such a kidney should act if it was assumed that its ureter had been blocked for five years. It had been suggested that at no time was the ureter completely blocked, at least until the additional strain was put upon it by the blocking up of the other side. From the gross appearance of the kidney he did not expect that the kidney would take up its function, although it apparently had. With regard to doing a ureterocystotomy at the primary operation he could not say that this would have been the better course to pursue. What then was needed was to relieve the kidney of its distention so that the kidney could functionate again. He said it was almost impossible to make an absolute diagnosis of calculus anuria, but were it possible it is best to meet primarily the vital indication, which in these cases is only a nephrotomy.

Repair for Large Defect of Urethra.—Dr. A. V. Moschcowitz also presented this patient. He had never had lues or gonorrhea. He was admitted to Mt. Sinai Hospital last spring when he gave the following history: About one year before his admission to the hospital he had a painful swelling in the perineum which was thought to be an abscess and was incised at some hospital in New York. Since then there had been dribbling of urine. One day before admission he was cystoscoped by a physician and sent into the hospital with a diagnosis of tumor of the bladder. He would have come anyway because shortly after he had a severe chill and rise of temperature. Upon admission to the hospital there was found an extensive phlegmon of the perineum and scrotum and a fistula which led to some part of the urinary tract. This abscess was incised in different directions, and, in spite of the septic condition, the patient made a good recovery, but the fistula remained. The patient was discharged, but readmitted September 14. Two days later the fistula was laid bare. From the previous abscess and the gangrenous loss of urethra there was found a defect which extended nearly to the rectum, 3½ inches in length. After the parts had been thoroughly cleansed the question arose how to repair this extensive defect. The epithelium had gradually grown toward the urethra on both sides; therefore

he dissected it up for three-quarters of an inch on either side, introduced a catheter through the urethra into the bladder, and united the cutaneous flaps over this catheter, uniting them in the median line. The catheter was left in for two weeks and then the wound was practically healed. The endoscope now showed a peculiar condition of affairs, as the urethra does not collapse at the end of the tube, but remains patulous for some distance beyond it. It was possible to pass a 30 Fr. sound with ease and comfort. The patient retains his urine well. The man is more or less morose because he has lost his power of copulation, which he believed was due to the extensive loss of muscle of the perineum and,

Fig. 1.



The upper illustration shows Brenner's single catheter cystoscope; the lower, Dr. F. Tilden Brown's first double catheter cystoscope.

in a greater measure, to the division of the nerves which supply those various muscles.

Presentation of Some Cystoscopes Designed for Different Purposes.—Dr. F. Tilden Brown exhibited these. He said he would esteem it a privilege to show these instruments before this particular section of the Academy of Medicine, and to hear the criticism of those who have used any of them. So far as he has been able to ascertain, his original double-barrelled ureter cystoscope, Fig. 1, B, was the first instrument of any kind which in both sexes catheterized the two ureters synchronously. This was but a modification of Brenner's single catheter cystoscope, Fig. 1, A, and in-

Fig. 2.

DR. F. TILDEN BROWN'S DOUBLE CATHETER AND TWO-WAY IRRIGATING CYSTOSCOPE.

volved no new principle in construction or of technic. In former publications[1] he has explained the nature of the limitations of the two instruments just referred to, as well as wherein requirements for something better led him, aided by Mr. Rheinholt Wappler, to gradually evolve and by continued clinical tests to perfect his present type of cystoscope, the aim of which was to assemble two irrigating channels, two catheter canals and a telescope all in a circumference of 24 Fr. The basic feature which made this feasible was a lamp-tipped open sheath needing an obturator to pass it to the bladder, then the obturator was replaced by a telescopic tube, carrying two catheter canals. Thus by omission of the old time terminal window the essential space was gained, and a departure made from the antecedent types of cystoscopes. The change provided for several different ways of rapid bladder irrigation or change of distending medium, whether water or air. It also obviated the risk rather remotely inherent to other catheter cystoscopes of having the catheters or catheter canals catch up infectious material while passing through the urethra. This scheme as first developed in the catheterizing instrument, Fig. 2, was found to be practicable, and it was but a natural amplification of it to equip the same sheath with other interchangeable telescopic tubes having supplementary purposes, this set making up what was called the composite cystoscope, Fig. 3. As first made the telescopic tubes reached only to the convexity of the sheath and tip, it was later learned that the visual properties were greatly improved by having the telescopic tubes protrude into the bladder, so as to bring the terminal lens on a vertical plane not much behind that of the lamp, as shown in Fig. 4, when on account of this proximity of lens and lamp a brighter illumination was had than with previous forms of cystoscopes. When the catheterizing telescope is in use the matter of illumination is of particular moment because on the trigonum the mucous membrane is most apt to be congested and dark. In this region the projecting prow of the instrument serves an additional purpose, that of

Fig. 3.

DR. F. TILDEN BROWN'S COMPOSITE CYSTOSCOPE.

depressing a slight ridge of mucous membrane, which in some bladders tends more or less to intercept the horizon between the internal meatus and the ureter mouths. In addition to the advantages mentioned in having the terminal lens extended forward, it is just as important to have the underlying catheter canals terminate almost on a line with the lens, for two reasons: (1) That these canals may give sufficient support to the flexible catheters in order to overcome a muscular resistance occasionally met with at the ureter mouths or a trifle within; (2) that the catheter points when advanced may have no chance of plowing over this sensitive part of the bladder.

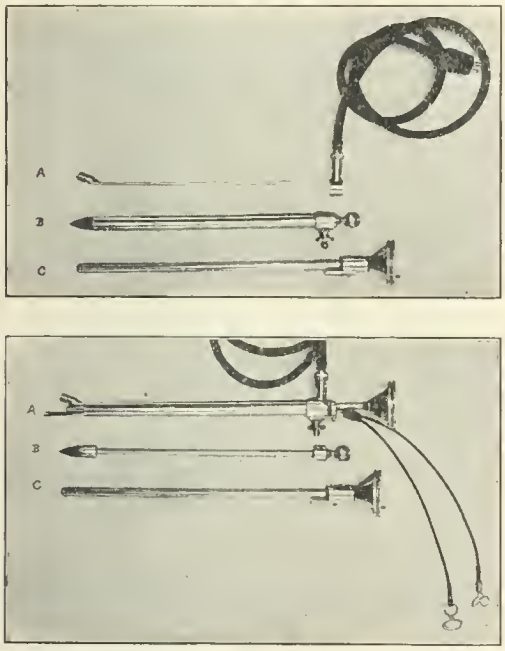
Dr. Follen Cabot said that, in his experience, the oval sheath was easier to introduce than the cylindrical one. Upon withdrawing the instrument the catheters could be left in place. He had held the catheters in place as long as fifteen minutes without getting much urine. Withdrawing the instrument in this way and leaving the catheters in would enable one to wait for hours, if need be, to get sufficient urine for examination purposes. The instrument he referred to was made without separate chambers for the catheters and had been used in over a hundred cases with perfect satisfaction. This ureter cystoscope could also be used for observation. It had been devised by the speaker somewhat along the lines of the Brenner and F. Tilden Brown instruments, and will be shown at the next meeting of the Academy (Genito-Urinary Section).

Dr. George K. Swinburne said that a point of advantage in Dr. Brown's instrument was that the instrument

[1] Annals of Surgery, Vol. XXX, p. 661; Annals of Surgery, Vol. XXXV, p. 642; Medical and Surgical Report of the Presbyterian Hospital, Vol. V, p. 670.

could be passed into the bladder and the bladder washed out through the tube and then the telescope inserted without withdrawing the instrument. This was an advantage possessed by no other instrument. Oftentimes the fluid within the bladder would become so muddy that one could not see and the possibility of washing out the bladder without withdrawing the instrument made it of additional value. One often could see something when the telescope was introduced which a moment later would not be apparent. Dr. Brown spoke of withdrawing the instrument into the neck of the bladder before inserting the telescope. He said he had been in the habit of simply raising the proximal ends so that the opening was on the bladder floor; thus the bladder contents were retained. He had noticed that when the opening got into the bladder neck, pushing it forward sometimes scraped the neck of the bladder and caused enough bleeding to make the cystoscopic examination

Fig. 4.



DR. F. TILDEN BROWN'S SUPRAPUBIC TROCAR CYSTOSCOPE. (Used with the same telescopes as in Fig. 3.)

impossible. The lenses in the Nitze cystoscope he considered to be clearer, but so far as the practical working of cystoscope was concerned Dr. Brown's instrument he believed to be superior to the Nitze.

Dr. Follen Cabot said the irrigation attachment could be used for filling the bladder. After the telescope was secured in place it could be filled through this irrigating attachment, running the fluid in one side and out through the other. He said that if the catheters were to be left in place and the instrument withdrawn they should be pushed in farther than usual. He had found that the catheters, unless very small in size, were likely to catch in an attempt to withdraw the Brown instrument, whereas with his cystoscope this difficulty had been overcome by the omission of the separate catheter compartments and other changes in the instrument.

Dr. F. Tilden Brown thanked Dr. Swinburne for his allusion to the points mentioned regarding the proper place on the trigonum for resting the open sheath to promote escape of the distending medium during interchange of the telescopic tubes, although, as Dr. Cabot had stated, it was a feature of the instrument that such irrigation could be carried on with the telescopes in the sheath. Dr. Brown said that if there was any particular reason for keeping a catheter in the ureter for some length of time it was of course better to employ a long catheter and pass it nearly or quite to the renal pelvis, but he showed how easy it was to manage the withdrawal of the cystoscope so as to leave some short catheters in the ureters. For a number of reasons he was opposed to the plan of leaving a catheter in the ureter, as well as to the withdrawal of the cystoscope until the urine collection had been completed. It was in order to obviate this necessity which had led him to provide the extra inlet and exit channels so that the vesical distention could be relieved as soon as the catheters were in the ureters. The to and fro motion of the tip of a catheter in the ureter, which must take place more or less during removal of the cystoscope, was very apt to cause an exfoliation of the ureteric epithelium and some admixture of blood with the collected urine. It seemed scarcely necessary to point out the errors which might thus accrue from the presence of blood in one or both of the urine specimens when it did not properly belong there.

Dr. H. W. Van Allen, of Springfield, Mass., opened the discussion by stating that there seemed to be two classes of men present, viz., the gentlemen who were surgeons and who cared but little about the high or low vacuum tubes, but who looked upon them as a means of accurate diagnosis, and the gentlemen who were doing X-ray work for the surgeons. In speaking of renal calculi he said there were no symptoms that were constant and even one of the more recent text-books, in referring to kidney stone, stated "pus in the urine was the only constant symptom of kidney stone," while on the same page it was stated "pus from the kidney is not a constant sign." This to him showed that aid was required to more accurately diagnose this condition. He said that Dr. Cole alluded to the ray of selective absorption. It was this quality of light and not the quantity which gave the details necessary for accurate diagnosis, and there should be unison between the interruptor, the tube and the coil, and he believed that it was in this unison that Dr. Cole had so well succeeded in his work. Dr. Van Allen had tried to get this ray of selective absorption and said it was very easy to talk about it but harder to get, and he related a case in point. A man gave all the clinical symptoms of renal stone but the ray did not show any, although there was detailed bone, etc. It was only on the third attempt that any stone was demonstrated. The use of an absolutely dark room he believed to be very essential for this kind of work, allowing only a little weak ruby light at times. He used a weak but long development and so did not lose many of the details. He had been using intensifying solutions with success, for it brought out additional details on the plate. He related an instance of a patient with stone in the bladder and the plate was not at all satisfactory, three stones showing faintly. When the intensifying solution was used four stones were plainly shown and later the man presented himself with the four stones he had since passed. He believed older tubes gave better work because of some change in its structure making it capable of better regulation.

Dr. Robert Abbe continued the discussion and said that it had been his experience to always find the stone by radiograph if present, even when so small a one as but eight grains of uric acid; in that instance the stone showed most beautifully with a tube of ordinary vacuum. He had come to the conclusion that any tube that would

give a good bone picture would give a good stone picture, and this conclusion was justified in the instance referred to where an eight-grain uric acid stone was beautifully shown on the plate, which also showed well the transverse processes of the vertebræ. If one could represent the transverse processes on the plate he felt sure that any stone would be shown if present. His belief is that the differentiation of the varying density of soft tissues is a distinct advance in skiagraphy, but that, in the search for calculous material it seems unwise to elicit any differentiation of structures other than bone and calculus. There is not any structure in the body at all resembling in density either bone or stone which by their both containing earthy salts are much alike in density, hence whatever selective ray will take a bone picture will take a stone picture.

He said that this was a subject that appealed very greatly to him, coming as it did to the surgeon's aid within the last five or six years, for he now could prove the presence of renal stones which before were only suspected. He recalled one case that for a year was treated for sciatica, for he presented few urinary symptoms. Microscopical examination of the urine had been made once and only a few blood corpuscles found. The picture taken showed very beautifully a stone in the upper part of his right kidney weighing 15 grains.

A matter of much interest to the surgeon, when he has a skiagraph showing renal calculus, is the fact that in a majority of cases the stone is not in the pelvis of the kidney, but has a separate cavity in the kidney substance from which it often is extracted with difficulty. It has first grown from a crystal formed in a uriniferous tubule at the summit of a pyramid. This grows larger at the expense of the pyramid, until an excavation is created as large as the stone, one corner of which peeps out into the pelvis. When the operator introduces his finger into the renal pelvis he is surprised to find no stone, but a metal probe soon detects a grating which he finds and loses several times—then slips the probe into the calculus pocket, passes a bistourie alongside, slits up the small opening and extracts the stone. One further note is worth recording: That several pyelonephrosis cases have made permanent recoveries, after removal of the large stones, without removal of the kidney.

Dr. F. Tilden Brown said that Dr. Cole's masterly exposition of fine X-ray work, which he explains as due to a perfect adjustment of tube, coil and interrupter so as to yield rays of selective absorption, has been most interesting and instructive. The differentiation of tissue shown in many of his plates by reason of this quality of the rays brings out such a variety of detail, especially the high and low lights resulting from gas and fecal masses in the intestine, that it would not be an easy matter for any except an expert to interpret the whole. It is daily becoming more evident that this branch of medical science can only expect full justice from those who make it a special study. A year ago in the discussion of this same topic he said regarding the value of X-rays in the diagnosis of renal calculus that the method was not authoritative when the radiographic returns are negative, but that it was authoritative when affirmative; that is, where two or more plates, differentiating the normal structures clearly, showed identical abnormal shadows in the region known to be occupied by the kidney which had given the ordinary clinical symptoms of stone. Considerable experience had not diminished this confidence until the advent of a recent patient, in the person of a young Cuban woman, who came to him for operation through the courtesy of Dr. Henna. Before reciting the details he would like to propose that the two excellent radiographic plates made in Dr. Townsend's studio of this case be submitted now to any one or several of the experts present for interpretation as to whether the shadow represents a stone or not. Now that Dr. Cole reports that this shadow might reasonably be expected to indicate the presence of a stone he would say that, although Dr. Henna had wisely suggested that Dr. Brown should do ureteral catheterization before operating, but he advised against it as unnecessary, in the face of a distinct shadow in two X-ray plates backed by a typical calculous history, being actuated besides in this advice by the fact that several careful microscopical examinations of the urine for tubercle bacilli had been negative. During right lumbar nephrotomy they found the fatty capsule irregularly cicatricial and adherent, on exposing the renal cortex a hickory-nut-sized hard mass was felt in the parenchyma beneath the convex border a little below its center; this was cut down upon, but instead of uncovering a stone it proved to be very condensed tissue. A moderately dilated pelvis was then explored by the finger, and from within this cavity the finger tip was worked into several of the calices. The same finger within the kidney, aided sometimes by the thumb of the same hand or by the forefinger of the opposite hand without, made a searching palpation of the entire organ and the upper two inches of the ureter; in this way several hard spots were felt in the parenchyma, but they were all much smaller than the original one, and although presumably of the same nature each was nevertheless subjected to blunt needling. At the end of this examination they were satisfied that there was no stone in the kidney, nor did the finger or the various metal instruments detect the presence of any fine calcareous matter in these indurated nodules. Palpation of the ureter showed it to be about normal size and far too small to have permitted the recent passage of a calculus corresponding to the X-ray shadow. For three days the bladder urine was much blood-stained. The patient had no unfavorable reaction and the parietal wound was closed on the third day. After convalescence cystoscopy in conjunction with synchronous ureter catheterization revealed a moderately ulcerated right ureter mouth, presenting the typical features of a very chronic tuberculosis, and although additional search has been made for tubercle bacilli in the separate urines without success, we have little doubt but that the X-ray shadow was produced by a condensation of tissue in the right kidney, probably caused by a rather unusual tuberculous process. The fact that this kidney was firmly fixed by a cicatricial state of much of its capsule makes it easier to comprehend how a good X-ray plate could bring out differentiation in the kidney tissue in a way it could not have done if the organ was making the normal excursions incidental to respiration. Dr. Brown feels that in the future cystoscopy and ureter catheterization are to be given greater importance in the corroborative diagnosis of all cases where even affirmative evidence of renal or ureteral calculus has already been had from X-ray and clinical examination. Had he made the ureter catheterization test in the case cited before the operation and learned from it that the left kidney was healthy and the right diseased, he would have been in a position at the time of the fruitless nephrotomy for stone to have done a nephrectomy instead of having probably to subject the patient to this additional operation in the future.

Dr. Willy Meyer said that it seemed to him better to have an X-ray picture taken for diagnosis of renal calculi than to attempt a uretero catheterization. This opinion held good for males as well as for females. He asked the opinion of the reader of the paper regarding

the advisability of blowing up the colon with air, as advocated by some European authority; by so doing it was claimed that the shadows were much better portrayed. Dr. Meyer related the history of a lady, thirty-two years old, who gave a history of calculus in the left ureter. She had a high temperature and presented symptoms of an acute pyelonephritis on the left side, and it was thought best to wait until her symptoms improved before taking an X-ray photograph. The patient got better. On the day set for taking the radiograph she suddenly developed chill and high fever and it was thought best to operate at once. A kidney with a large pelvis was found, brownish-red in color, extremely brittle and, within the cortex, there were found many abscesses.

A smear was then taken and culture test made and the kidney was then split, but no stone could be found, compression being made on the renal vessels. A bougie was passed into the ureter and low down was found an obstruction. A catheter, with an open end at the tip, was introduced and the ureter was flushed with water and the water returned. Whether it was a stone or a stricture that caused the obstruction was not then known. No cystoscopic examination had been made and he did not even know whether there was a kidney on the opposite side. The kidney was drained, the patient improved, but the kidney wound refused to heal. Palpation through the vagina did not reveal any hard mass in the pelvis.

He then catheterized the ureters, using the Kelly method, and it was interesting to him to find an obstruction which he could pass; when passed there followed a gush of about one ounce of urine. The ureter and renal pelvis were irrigated with a sterilized boric acid solution. On pulling back the tip of the instrument to the place of the obstruction he found the water stopped and then again began to flow on further pulling out the catheter, which led him to believe he was dealing with a small pouch in the ureter, probably containing a stone. A waxed-tip catheter, which was introduced afterward, showed a mark. After the patient had improved, an X-ray picture was taken and two stones were shown in the pelvic part of the ureter. The smaller one was passed. The patient was operated upon, an abdominal incision made, and just at the place where the uterine artery crosses the ureter was found the larger calculus. This patient then made a good recovery. Within the last year Dr. Meyer had seen two patients with renal calculi. One was a patient of his own who had an attack of acute retention ushered in by renal colic. A diagnosis of renal calculus was made. The patient also had an enlarged prostate, which was removed by the perineal route. He was about to go West when he was suddenly seized, while riding, with a chill, high fever, prostration and symptoms pointing to renal colic or an attack of appendicitis. Within the next twelve hours he had another chill, high fever and symptoms of sepsis of a most acute character. He was operated upon and in the mucosa of the pelvis of the kidney was found a distinct spot of necrosis where a stone had rested for some time and caused a pressure necrosis. A pure culture of the colon bacillus was made. The other patient, had about the same history, was profoundly septic and died six hours after Dr. Meyer saw him. Dr. Meyer mentioned these cases because some thought that the treatment of renal calculi was on the border line of medicine and surgery. He always advised patients suffering from renal calculi to submit to operation, if previous colics were accompanied with septic symptoms.

Dr. Carl Beck said that having succeeded in obtaining an indistinct shadow in renal tuberculosis which was caused by calcareous deposits in the foci, he tried to determine experimentally to what extent destructive processes in the kidneys could be represented by the Roentgen rays. The result was that a moderate amount of calcareous matter could be recognized by the use of the diaphragm as a light and disseminated shadow in contrast to nephrolithiasis, which cast a darker and more confluent shadow. When no calcareous deposits existed in association with the tuberculous process, skiagraphic representation with our present means seemed to him to be unreliable. In one case a large tuberculous cavity showed at the upper and a smaller one at the lower pole of the kidney which had been bisected. In another skiagraph demonstration was demonstrated the proportional degree of translucency which was naturally more marked at the upper pole. This translucency, however, did not show distinctly if skiagraphed through the abdominal wall, so that it could not be relied on practically. In exploratory nephrotomy, however, this translucency could be ascertained by a fluoroscope surrounded by sterile gauze, so that the foci might be located before the renal tissues were divided.

Dr. Sinclair Tousey said that the radiographs shown by Dr. Cole were excellent and represented an amount of study as to technic which only those of us could realize who have tried to obtain the same results. For large or corpulent patients he had used a board such as was shown for compressing the abdomen. It effected a reduction of two to three inches in the thickness of the abdomen and did not cast the slightest shadow on the plate, and enabled him to extend this method of examination to patients too large to be sure of results in the ordinary way. Very lately a compression cylinder had come into use in Germany, and the picture which he presented, from the *Journal of Physiologic Therapeutics,* illustrated its use. A cylinder, five inches or so in diameter, was placed on end upon the abdomen and the light from the X-ray tube shown down the cylinder. The pressure of the cylinder compresses the abdomen and reduced the thickness of tissue to be penetrated, and the lead pined walls of the cylinder presented all but the direct rays from the anodal disk from reaching the plate. Cutting off all the diffuse light arising from the walls of the X-ray tube was claimed to produce a much clearer picture. The size of the picture, however, was only about five inches in diameter. He said an X-ray picture was not like an ordinary photograph produced by focusing rays upon given points, nor was it like an ordinary shadow. It was really a chart of the relative density of the parts presented upon the plate. For instance, upon a certain part of the plate was cast the shadow of a column eight inches inheight and of the density of water and, on another part of the plate, the shadow of a similar column to which a pinch of bone salts had been added. The difference in relative densities, of course, was so slight that it took perfect technic to show it all. He showed, therewith, his radiometer in which by the number of thicknesses of the tin-foil rendered transparent he could determine the degree of vacuum in the tube. He found a mathematical standard like this of the very greatest value in this delicate work. The proper degree of vacuum for renal work would produce a picture of the kind shown in which the flesh and nails were visible, the bones almost black and the internal structure of the bone showing. It represented about No. 3 on his radiometer scale. The radiographs of the pelvis and lumbar region which he had brought for exhibition showed about the right amount of penetration for diagnostic work in the case of suspected renal or ureteral or vesical calculi, the detail shown justifying him in this opinion.

BOOK REVIEWS.

Diseases of the Intestines and Peritoneum. By Dr. Hermann Nothnagel, of Vienna. The entire volume edited, with additions, by Humphrey D. Rolleston, M.D., F.R.C.P., Physician to St. George's Hospital, London, England. W. B. Saunders & Company, Philadelphia, New York, London.

The present volume of the Nothnagel series is noteworthy as the contribution of this great German series of text-books on medicine of the distinguished editor himself, Professor Hermann Nothnagel, of Vienna. The original volume in German was one of the earliest of the series and was issued some ten years ago, but this English translation is from the second edition which came from the press only last year. A number of additions have been made by the English editor, among them especially sections on Intestinal Sand, Sprue, Ulcerative Colitis and Idiopathic Dilatation of the Colon. The section on Intussusception of the Colon has been greatly enlarged by the contributions of Dr D'Arcy Power, the distinguished authority.

In general it may be said that no text-book in English on this subject is nearly so complete as the present volume. Practically every page bears evidence of additions from the English editor's hands. The references to recent English and American literature are especially complete. On one page we note no fewer than six references to American articles, none of which were published prior to 1901. There is perhaps even a tendency to quote too many opinions that are not as yet quite firmly fixed or generally admitted as genuine contributions to medical knowledge, opinions that will require more time and further confirmation or limitation before their true significance can be realized.

With the original material compiled by a German medical clinician and the editorial work done by an English physician it might be thought perhaps that the subject of appendicitis would not receive as full treatment as it is considered by Americans to deserve. This will not be found to be the case, however. The discussion of the subject is especially complete. The conservative attitude of the original somewhat modified by the English editor makes indeed as thoroughly practical a discussion of appendicitis without sensational features as could be desired. The volume is a welcome addition.

The Therapeutics of Mineral Springs and Climates. By I. Burney Yeo, M.D., F.R.C.P. W. T. Keener & Co., Chicago.

Now that natural therapeutic measures are attracting much more attention than formerly, such books as Dr. Burney Yeo's, with regard to the therapeutic possibilities of the different mineral waters as well as the régime which is practised at the springs and their varying climate environment, cannot fail to be of special interest. For those who are likely to have patients to send to any of the various watering places or health resorts of Europe or North Africa this book will prove an excellent guide. No place of any importance is omitted, and definite information of the kind likely to be looked for by a physician is given with regard to each of them. We have, of course, in this country a variety of climate and of mineral water amply sufficient for this form of therapeutics, but there are those who feel the necessity for something more distant to effect a cure in their cases, and for patients who need the all-prevailing influence of such a suggestion the physician who has not himself had opportunities for wide European travel will, with the aid of this book, be able to pick out the locality likely to be of service.

Clinical Treatises on the Pathology and Therapy of Disorders of Metaboliam and Nutrition. By Dr. Carl von Noorden, Physician in Chief to the City Hospital, Frankfort a. M., Part V, Concerning the effects of Saline Waters (Kissingen, Homburg) on Metabolism. E. B. Treat & Co., New York.

This series has a very definite practical clinical value that can scarcely fail to commend it to those who are looking for rational therapy for the commoner forms of disease. This number of the series is at least as interesting as others. The variations of opinion as to the effect of salines on the system from the merely mechanical withdrawal of serum, the only action according to some, to the most striking alterative effects as claimed by others, are discussed from the practical standpoint of case histories. Salines have been found useful, especially in superacidity of the stomach, though nervous superacidity is not always relieved. They do good occasionally, however, in anacidity, also. On the other hand in spite of the warning at Carlsbad and many other saline springs that persons taking the cure must not eat fat, salines have been found not to hinder but rather to help the digestion of fat.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared original Articles, on Treatment, Medicine, Surgery, etc., by leading members of the Medical Profession Throughout the World. Volume II, Fourteenth Series. J. B. Lippincott Co., Philadelphia.

The present number of the International Clinics contains an especially informing set of articles on the diseases of warm climates. Among them the article by Dr. Mason, U.S.A., on the "Spread of Diseases by Insects, with Suggestions Regarding Prophylaxis," will be found eminently useful outside the tropics also. The series also contains articles on "Malarial Hemoglobinuria" and on the "Etiology of Bilious Hemoglobinuric Fever," that will be of special interest in our Southern States. The last article of the series on the "Treatment and Mode of Life to be Pursued on Return to a Cold Climate by Those Suffering from the Commoner Affections Incidental to a Sojourn in Tropical Countries" should be read with attention by physicians all over the country, since very few medical practitioners of wide experience fail to have among their patients returned soldiers from the Philippines and other American citizens who have come back, with or without the fortune they went to seek, from Cuba, Porto Rico and our other more or less tropical possessions. The rest of the volume is taken up with the clinical lessons quite up to the usual high standard.

Burdett's Hospital and Charities, 1904, Being the Year Book of Philanthropy and the Hospital Annual. By Sir Henry Burdett, K.C.B. Scientific Press, Limited, London.

Sir Henry Burdett's Manual of Hospitals and Charities is too well known to need anything more than a notice of the present yearly issue. Most of the book of course is devoted to hospitals and other charitable institutions in the British Islands. There is, however, some sixty pages devoted to hospitals in the United States of America, and under the head of Colonial Hospitals, some fifteen pages devoted to Canada. The book will accordingly have more than an academic interest for Americans and at the same time serving as an exhaustive guide and directory for the English medical charitable institutions. Naturally the edition is distinctly defective for American hospitals, some of the most noted being omitted.

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ORIGINAL ARTICLES.

TECHNICAL ERRORS IN THE USE OF RUBBER GLOVES.[1]

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ABOUT five or six years ago the question of the use of some form of glove to be employed in operative manipulations was revived. While not a new proposition, the discussions aroused at that time were listened to with much interest by American surgeons and particularly by those in New York. As is always the case in the problems of the medical profession, there were numerous arguments advanced by the opposing factions, although the great majority recognized the immense superiority of the glove over the naked hand from the standpoint of asepsis. There was, though, much division of opinion as to the kind of glove to be worn, the method of use and whether or no the surgeon's skill was handicapped.

It would not be of value to review these arguments now, but it is of interest to note that eight years ago there were but very few operators in this country who made any attempt whatever to wear gloves as a routine during operations. At that time the practical use of gloves was limited to occasional instances as a self-protection when operating on highly infectious cases. Now, on the other hand, the majority of surgeons look upon the use of gloves as much a matter of course as any of the rest of our aseptic technics.

The consensus of opinion is also in favor of a glove made of pure impervious India rubber and a gum glove is the kind almost universally adopted.

The writer does not wish to reiterate the arguments advocating the use of rubber gloves, for he assumes their value is taken for granted and proven. He wishes, however, to point out the technical errors in the use of rubber gloves, because it is possible to witness many surgical operations where several people are employed and see gross errors of technic in the manner of using gloves; errors not so much of carelessness, but of lack of instruction and thought on the subject. This applies particularly to the internes on our hospital staffs and nurses. We assume that the surgeons-in-chief have studied the subject and errors on their part we ascribe to carelessness, but the juniors are receiving their training and the details of instruction should not be neglected. Their thought and power of logic should be waked so that a correct routine becomes a matter of almost unconscious habit. To more thoroughly eradicate the errors, it would be wise to rehearse the purposes the gloves serve in advancing the cause of asepsis.

Foremost it is impossible to assume, beyond all question, that one can by the use of antiseptics prepare the hands of all persons employed in an operation, so as to be confident that each and every hand is sterile for each operation. Of course, many times some of the hands are aseptic, but one cannot be sure that all are invariably so.

Gloves of pure rubber can be unfailingly rendered aseptic by boiling. Another point of greatest value is that impervious gloves preclude the possibility of exfoliations and detritus, from the hands, entering the surgical wound. A third point is that a smooth surface like a rubber glove can be more readily freed of coagulated blood and other materials than can the rough skin of the hand. The first argument in favor of the use of gloves is the one which the writer believes is most frequently set at naught by the careless manner in which the gloves are drawn on the hand. For example, the surgeon washes his hands in the most thorough manner, rinses them in various powerful antiseptics, according to his fancy, dries his hands on a sterile towel and is now ready for his gloves. Are his hands sterile? Does he know it for a fact? If so, he is foolish to go to the trouble of wearing gloves. On the other hand, does he doubt the asepsis of his hands? Is he credulous? If so, note how he vitiates his technic by his manner of putting on the gloves. Over and over again, by those who should know better, I have seen it done as follows: The gauntlet or wristband of the left glove is seized in a generous grasp by the right hand, and the left hand pushed into the gloves as far as possible; then with the naked right hand the finger tips of the left glove are stroked into place and the glove nicely adjusted. The right glove is now grasped by the left hand, already clothed, and the naked right hand introduced and the glove drawn into place, usually at the expense of dragging the left gloved thumb over the naked right hand and wrist. The surgeon now feels ready to begin his work or possibly deems it wise to rinse off his gloved hands in some sterile solution.

Another favorite method of putting on gloves is to throw several pairs of freshly boiled gloves into a bowl of bichloride of mercury solution or some similar antiseptic liquid. The surgeon, after thoroughly washing his hands as before, proceeds to draw or rather to float onto his hands the gloves lying in the bowl. During these manipulations he splashes the solution over the naked forearms and hands, the solution in turn bathes the gloves and smears over their outer surface, epithelium, etc., washed from the skin. The foregoing errors in technics are perfectly ap-

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parent when they are brought to our notice, and that they are errors in fact and not hair splittings must be conceded by all who admit the truth of the first and most important reason for wearing gloves, namely, the uncertainty of being able to sterlize all hands every time for all operations.

If one accepts the above as a fact, and I think nearly all up to date surgeons do, what possible excuse can there be for allowing the discredited and suspected hand to touch and rub up against the outside of the gloves so carefully prepared? If the surgeon adopts gloves, he places himself in the ranks of those who believe that the hand cannot infallibly be sterilized. If he then puts on his gloves as I have described, he must be a traitor to his beliefs. Successful operative results in spite of these errors, do not nullify the argument. We see many perfect healings after operations where gloves were not worn, but the element of possibility of wound infection in the case of the naked hand has been proven by laboratory tests to be high and practically nil with the sterile glove. Why, then, place on the face of the glove the very material we so eagerly strive to imprison within the glove?

Another objection to putting on gloves that are immersed in some liquid, is the constant dripping from the wrist of the water imperfectly confined by the fingers in the interior of the glove. This water may have been lodged at the finger tips for some time and after having macerated and bathed the skin, a thoughtless change of level of the hand allows this impure liquid to escape at the wrist and in all probability to fall into the wound or its immediate vicinity. The same is true where a torn finger tip is used. The whole glove acts as a funnel, the torn or tipless finger serving as the small end to lead with unerring aim the sweat, detritus, etc., of the whole hand into the wound.

The actual preparation of the gloves is often very carelessly done and unless they are simply picked from the boiler with a sterile instrument and handed hot and wet to the surgeon there are many chances for error in their preparation by thoughtless and imperfectly instructed persons.

The writer believes that the best and pleasantest use of gloves comes from putting them on dry with sterile starch, or lycopodium as a lubricant. In order to have them perfect the writer prepares his gloves in the following manner: A wide-mouthed bottle filled with pulverized starch and provided with a piece of gauze tied over the mouth in a single layer, is sterilized in a live steam sterilizer. At the same time several towels are sterilized by live steam in the usual manner. The gloves are then turned wrong side out, placed in a wire cage and submerged in clean water in the ordinary instrument boiler. Care should be taken that all of the glove is filled with water and the air driven out. Two pair of long dressing forceps or sponge holders should be put into the boiler with the gloves. The gloves are allowed to boil for from five to ten minutes, they are then taken from the cage and allowed to drain hastily. With the sterile forceps the gloves are placed on one of the sterile towels spread out flat and another sterile towel laid over them. If all the free water has been allowed to drain from the gloves, a little stroking and patting of the upper towel will thoroughly dry the outer surface (really the inside, for the gloves were turned wrong side out) in a few minutes. The upper towel is then turned back and the gloves, both back and palm, thoroughly dusted with the sterile starch from the bottle.

We are now ready to turn the gloves right side out. With one pair of forceps the edge of the wristband is lifted and the other pair of forceps introduced into the glove until the blades can grasp the web between the middle and ring fingers; by drawing on the interior pair of forceps and turning the cuff over with the other pair, it takes but a moment to completely reverse the palm or hand portion of the glove. The neatest way to reverse the fingers is to grasp two diametrically opposed points of the edge of the wristband with the two pair of forceps, and then twirl the glove two or three times about its transverse axis; in so doing one closes the orifice of the glove and imprisons some air in the palm. Lay the glove with the orifice still sealed on a steril towel, and pressing on the balloon part of the glove with another sterile towel, the compressed air causes the fingers to be everted with a rush. The gloves are next dried on their outer surface by again stroking and patting with a sterile towel until they are perfectly dry. They are now placed in a sterile towel with a piece of sterile gauze about four by eight inches laid between the gloves, another piece of gauze laid on top and the towel folded over and pinned. By this method of preparation the gloves have only come in contact with sterile towels, sterile forceps and sterile starch powder. The inside is well lubricated, the outside is perfectly free from powder and as the gloves were perfectly dry when put away, they can be kept several weeks without deterioration.

To put on the gloves for use, the writer thoroughly cleans his hands and dries them on a sterile towel. The package of gloves is opened, one of the pieces of gauze laid in with the gloves is picked up and with it as a protector the edge of one glove is seized and the other hand thrust into the glove. The gloved hand picks up the other glove, using the second piece of gauze and the other hand is clad. The pieces of gauze prevent contact of any part of the naked skin with the outer surface of the glove. The dry starch serves as an excellent lubricant and if any adjusting of the finger tips is necessary, this is not done until both hands have been clothed. The whole procedure is very rapid and offers no excuse for a break in technics, and a little thought on the subject will, after one trial, make one perfect.

Let us then properly prepare our gloves, properly put them on and use only such as are perfectly watertight. The gloves are sterile only so long as we keep them so; they have no inherent virtue, no antiseptic power. One would think on seeing the carelessness with which gloves are handled

that they had properties similar to radium, emitting powerful bacteriacidal rays and were capable of neutralizing the grossest negligence on the part of those who abuse them.

INTERSTITIAL GINGIVITIS OR SCORBUTUS.[1]

BY EUGENE S. TALBOT, M.S., D.D.S., M.D., LL.D.,
OF CHICAGO.

A DISCUSSION before the British Epidemiological Society, February 19, 1904,[2] while seeming to involve the issue of treatment and prophylaxis really involved the issue of diagnosis. This issue is likely to be frequently raised since the American acquisition of colonial possessions requiring garrisons, and since the acquirement of the protectorate over the Panama Canal.

Mayer Coplans of the British army medical service found that scurvy appeared among a population which had been maintained on government rations of good quality. This population consisted of burghers in "concentration camps," European soldiers, natives attached to the British army and to the civilian repatriation department.

Each concentration camp contained about 5,000 persons, 48 per cent. being children under twelve years of age, and among adults the women were to the men as three to one. Inclosed by barbed wire the camps, though open and airy, were securely isolated. The conditions being identical the varying incidence of scurvy was remarkable. Between March, 1901, and January, 1903, with no cases at Standerton or Volksrust, there were one hundred Europeans and one native attacked. Among the soldiers at Standerton and the 22,000 European patients admitted to the hospital there was but one; among the natives in the service of the troops there were attacked 32 per cent. of 400 muleteers, 22 per cent. of those attached to the Hussars and the Royal Artillery, 87 per cent. of the scavengers engaged in removing carcases of animals, 17 per cent. of the porters and about 50 per cent. of the muleteers in the employ of the repatriation department.

The heaviest incidence of scurvy was after the close of the war, and when all restrictions on food had been removed. In fact, it had no relation whatever to the food, but was almost everywhere directly in proportion to the neglect of cleanliness, of which the natives had not the most rudimentary notions, especially as regards the hygiene of the mouth. Even the outbreak among the burghers at Middleburg followed overcrowding and neglect of sanitation. As to treatment, the food, though mostly preserved and tinned, was good, but many refused the harsh sour lime-juice. Dietetic treatment was very successful; rapidly so, if accompanied by mechanical cleaning of the teeth and gums with continued use of antiseptic washes, though more slowly without.

A. E. Wright said filthy habits were not peculiar to the Kaffirs and were not always accompanied by scurvy, which occurred in the nurseries of the rich and in nursing homes. Scurvy was essentially an acid intoxication, a reduction in the alkalinity of the blood, which could be observed long before the grosser manifestations, alike in the adult and infantile forms. A large proportion of the troops returning from South Africa were scorbutic in the latent stage. R. H. Hirth called attention to the low values of the dietaries given, few exceeding two thousand kilocalories, or barely enough for the body work. The ash of tinned milk was often acid instead of alkaline. In one expedition he had had to condemn 30 per cent. of the milk. A large proportion of British troops on return from "little wars" were more or less scorbutic. J. Land Notter said, the Kaffirs, though supplied with good food, preferred putrid meat or entrails of dead animals.

K. B. Goadby had not seen any scurvy at the Dreadnought Hospital, but had met much pyorrhea alveolaris, a disease endemic and occasionally epidemic in West and Central Africa, the Transkei, Philippines and other places. This condition of the gums and the rapid recovery of the patients under antiseptic measures resembled that found in scurvy. H. T. Bulstrode called attention to the fact that the great naval surgeon, Lind, had, one hundred and fifty years ago, rejected the belief in specific action of lime-juice. E. F. Willoughby was surprised at the absence of reference to the theory of Tonk, of Christiania, namely, that scurvy was no more or less than a chronic ptomain poisoning, which he considered the only one that explained all the phenomena of scorbutus.

Polar expeditions led to the conclusion that a diet of fresh, even raw meat, without any fruit or vegetables whatever and associated with hardship, dirt and misery, or one consisting entirely of tinned, preserved and sterilized foods of the highest quality, but with no fresh food, animal or vegetable, did not produce symptoms of scurvy, while scurvy appeared when along with potatoes, etc., and daily doses of lime-juice, the bulk of the food consisted of ordinary salt beef or pork. Until the recent Antarctic expedition from that of Nordenskjold in the Vega none had been attacked by scurvy except that of Jackson, whose men remained on board the ship, where they had lime-juice, potatoes, etc., but refused the coarse, even "gamy" bears' flesh on which alone the exploring party subsisted. All were attacked with scurvy, two, indeed, dying.

The Laplanders of Finland bartered for farinacea, etc., but ate their fish putrid by preference and suffered much from scurvy. Coplans pointed out in reply that it required months for its development, for the members of the corps that suffered most were recruited in their homes in October and the corps was dissolved in December, the disease breaking out soon after arrival in camp. Recovery followed rapidly on purely local treatment in the way of buccal antiseptics without any attempt to influence the blood.

The term "scurvy" frequently employed in the discussion is applied to the disease in the mouth,

1 Received for publication April 19, 1904.
2 The Lancet, London, March 5, 1904.

especially in relation to the gums. Nothing is said in regard to other symptoms and the logical inference is that such were not present.

In scurvy there is inflammation and bleeding gums. The gums puff up, thicken and bleed easily. The teeth become loose and sore upon mastication. A disagreeable odor comes from the mouth. Salivation or ptyalism results from irritation from the teeth as well as scorbutic anemia. The patient is languid or tires, perspires freely upon exertion, has shortness of breath and palpitation of the heart. The face is ashy gray, becoming paler each day. Hemorrhage takes place in different parts of the body, especially beneath the skin, in the muscles and beneath the periosteum as well as in the joints. This often gives considerable pain and sometimes causes inflammation with resultant pus infection. Occasionally hemorrhage takes place in the internal structures. The temperature varies and both febrile apyretic states occur.

The symptoms observed in interstitial gingivitis are connected with the gums and alveolar process. There are no constitutional symptoms. This disease was formerly known as pyorrhea alveolaris because the disease was not recognized until pus was observed about the teeth. It exists for years before pus is noticed. All the teeth may be lost without pus. Since the inflammation is deep-seated in the alveolar process as well as in the gums, I have designated the disease interstitial gingivitis. The interstitial gingvitis due to scurvy, drug or self-poisoning has the same pathology.

As part of the pathology, the character of the structures involved must be taken into account. In man's evolution, the face, jaws and teeth are diminishing for the benefit of the brain, under the law of economy of growth resultant on the struggle for existence between organs. Jaw recession is well illustrated in the American negro.

In man's evolution from the lower vertebrates, he has acquired two sets of teeth. Some of the lower vertebrates possess continuous sets. These are used for awhile, shed and new ones take their place. Man sheds the temporary set early in life. Should he live long enough the permanent set must be shed. This result is brought about by a process which takes place in the jaws of every individual, and has been designated osteomalacia or senile absorption.

Through the struggle for existence between organs and the eruption and shedding of the teeth, the alveolar process is a doubly transitory structure. Being an end organ it is a most sensitive structure easily affected by disease, drugs and faulty metabolism.

The age at which senile absorption begins depends upon the degree of normality of the individual. If he be neurotic or degenerate, or have inherited or acquired a cachexia or taint, this process of inflammation and absorption commences as early as the eighteenth or twentieth year. The process of shedding the temporary teeth and the eruption of the permanent teeth is a similar one, but the alveolar process holding the permanent set of teeth has not developed.

Interstitial gingivitis attacks every alveolar process after it has its growth, or about the twenty-sixth year. The severity depends entirely upon the degree of balance between the organs, including proper elimination.

At forty to forty-five, the fourth period of stress or period of evolution, the disease is quite active. From this time absorption is rapid and loosening of the teeth later occurs, even in comparatively healthy individuals. If the patient be constipated, have kidney lesions, skin or lung disease, so that any one of the eliminating organs are not doing the work, auto-intoxication results. The inflammation of the alveolar process is markedly increased. Other than improper elimination, no morbid condition will produce interstitial gingivitis, as surely as intestinal fermentations. Through want of proper secretion, starchy food is not properly digested and fermentation results. Gases accumulate in the intestines. The urine is excessively acid. Indicanuria is present with low specific gravity and urea is scantily excreted. None of these symptoms are severe, but merely render the patient uncomfortable. The physician rarely considers them of moment. They play havoc, however, as a result of auto-intoxication.

Auto-intoxication due to faulty metabolism, changes in climate and surroundings causing a want of proper adjustment of the excretory organs, no doubt produce the type of interstitial gingivitis before designated as "scurvy." The same results have appeared with the American soldiers in Cuba and the Philippines, and engineers and workmen building railroads in high altitudes in Switzerland. People going from a mild climate to an extremely hot or cold one, or vice versa, with or without change of food, do not readily adjust themselves to the new environment and the underlying states of interstitial gingivitis develop. Hygiene in Panama will be needed along these lines, since interstitial gingivitis increases, very disastrously, the morbid conditions to which in part it owes its origin.

Constitutional secondary consequences of interstitial gingivitis could, as Goadby evidently surmised, mimic scurvy, even as to the hemorrhages and here antiscorbutic treatment would be useless. It must be remembered that depression plays a part in this direction through its influence on elimination and alimentation. The defective metabolism of the insane, independent of diet produces hemorrhagic states. The first test of all these states is the gums, and here treatment with proper stimulus of elimination will aid assimilation and remove these "scorbutic" tendencies.

Influential Gastro-enteritis.—Physicians in Germantown report an epidemic of gastro-enteritis that is considered to be influenzal in origin. Children up to four years of age are attacked and there is usually accompanying affection of the respiratory passages. In addition to the diarrhea, vomiting and fever are present. The kind of milk or other diet used seems to bear no relation whatever to the onset of the disease.

SOME WEATHER OBSERVATIONS IN THE ADIRONDACKS.[1]

BY LAWRASON BROWN, M.D.,
OF SARANAC LAKE, N. Y.

THE weather observations upon which this paper is based were taken for about five years in the village of Saranac Lake, on a partially protected slope of about 1,550 feet elevation, with a western exposure. During the remainder of the time the observations were made at the Adirondack Cottage Sanitarium, situated one-half mile north of the village of Saranac Lake on a hillside with a northeastern exposure, at an elevation of 1,625 feet.

The Adirondack Mountains lie in the northern part of New York State between latitude 42° 30′ and 44° 30′, and longitude 74° and 75° 30′ W., covering roughly about 125 miles square. The average elevation is 1,600 feet, with peaks 1,000 to 3,000 feet higher, extending in general toward the southwest and northeast in several irregular ranges. The soil is composed chiefly of light sand, very porous, and glacial drift and moraines are common. Except along some of the more frequented roadways the whole region is rather densely wooded. Deciduous and evergreen trees occur in about equal proportions. A majority of the peaks and lesser elevations are wooded to the top and with each season present varying hues that render the landscape beautiful.

The whole region abounds in lakes and streams, which form one of its chief charms. Several rivers rise from these lakes, among them the Hudson, the Raquette, the Saranac, the St. Regis and the Beaver. The greater part of the shores and banks of the lakes and rivers are wooded to the very water's edge. Most of the

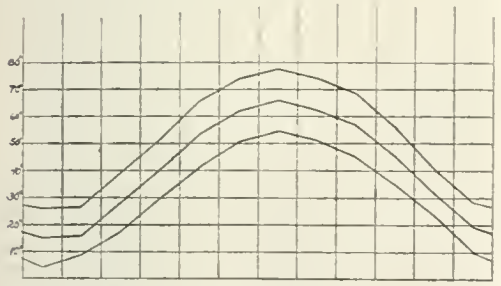

CHART I.—SHOWS MONTHLY MEAN OF MAXIMUM, MINIMUM AND MEAN TEMPERATURES AVERAGED FOR TEN YEARS.

lakes are small, but the Saranac lakes (upper and lower), Tupper Lake, Lake Placid and a few others, have a length of from five to ten or more miles. An idea of the frequency of the lakes and streams is conceived when it is known that one can start at Fulton Chain and go to Saranac Lake almost entirely by water, a distance of 100 miles or more, making short portages or "carries" between some of the lakes. The Adirondack region is well protected from the ocean by the White and Green Mountain ranges. Lake Ontario modifies the western slope, while the northern is under much the same influences as the St. Lawrence valley.

The Temperature of the Atmosphere.—The mean annual temperature for Saranac Lake was 41.57° F. for the ten years ending December 31, 1903. The monthly means varied from 14.98° for January to 66.24° F. for July, and are to be seen on Chart 1, as follows:

January	14.98°	(15)
February	15.62°	(16)
March	28.14°	(28)
April	40.65°	(41)
May	53.63°	(54)
June	62.50°	(63)
July	66.24°	(66)
August	62.84°	(63)
September	57.24°	(57)
October	45.67°	(46)
November	32.09°	(32)
December	19.23°	(19)

The mean maximum for this time was 52.47 (52) and the mean minimum 30.67° (31). The mean daily range was 21.8 (22), being greatest in the summer. January and February are the coldest two months with mean minimums of 3.98° and 4.76°. June, July and August are the warmest three months with mean maximums 74.23° (74), 77.86° (78) and 74.51° (75) respectively. The nights are always cool and it is rare that one does not require blankets.

The records show that during the period under observation a temperature of 90° F. has been recorded but 19 times, and during the last two years the thermometer has not reached that figure. On the other hand, on about 180 days each year 32° F. or less is registered. The highest recorded temperature is 95° F. on July 5, 1897, the lowest—38° F. on February 16, 1896. July is the warmest month and January the coldest.

The solar temperature has not been recorded.

Atmospheric Moisture. — The hygrometric state of the air has not been investigated. Last fall a sling psychrometer was used for one month, September 26 to October 26, at 8 A.M., 1 P.M. and 6 P.M. The average readings for this month were as follows:

8 A.M.	78.4 per cent.
1 P.M.	61.4 per cent.
6 P.M.	76.0 per cent.

Precipitation.—The average annual precipitation for ten years was 34.55 inches. The mean monthly precipitation was 2.88 inches and varied from 2.07 inches in April to 4.12 inches in July. The mean monthly figures are as follows:

January	2.29 inches	(2¼)
February	2.25 inches	(2¼)
March	2.80 inches	(2¾)
April	2.07 inches	(2)
May	2.95 inches	(3)
June	3.80 inches	(3¾)
July	4.12 inches	(4)
August	3.48 inches	(3½)
September	3.15 inches	(3¼)
October	2.70 inches	(2¾)
November	2.56 inches	(2½)
December	2.38 inches	(2½)

[1] Presented to the American Climatological Association, June 2, 1904.

The average yearly snowfall was 90.74 inches. A trace of snow fell in September, nearly an inch in October, 11 in November, 13 in December, 21 in January, 21 in February, 16 in March, six in April, and 1½ in May. From this it is seen that with the exception of June, July and August, snow falls every month, and averages for the year slightly more than 7½ feet. Consequently one-quarter of the precipitation (exactly 26 per cent.) is in the form of snow. The lakes and ponds are frozen from the latter part of November to March and at times the ice does not break up until May. These frozen waterways are used extensively for driving and hauling in winter.

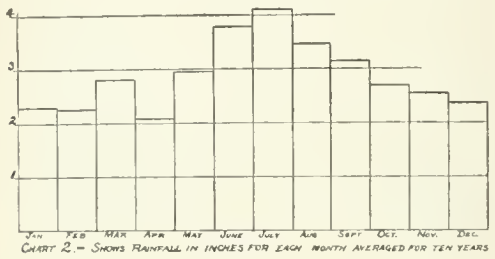

CHART 2.—SHOWS RAINFALL IN INCHES FOR EACH MONTH AVERAGED FOR TEN YEARS

It is of interest to note that April is the month with least precipitation (2.07) and July with the greatest (4.12 inches).

There is 0.01 inch or more precipitation on 145 days each year, or on twelve days out of each month. The average number of rainy and snowy days per month is as follows:

January	14.0	(14)
February	12.6	(13)
March	12.8	(13)
April	10.0	(10)
May	11.7	(12)
June	11.1	(11)
July	13.2	(13)
August	11.9	(12)
September	9.6	(10)
October	11.5	(12)
November	12.7	(13)
December	14.2	(14)

During December, January and February the precipitation is almost entirely in the form of snow. The number of rainy days in these three months are on an average about seven. During November and March, the snowy days (16) are nearly double the rainy days in number, while in April the number of snowy days (3) are considerably less than half the number of rainy days.

From these figures we gather that from the first of November to the first of April there is 0.01 inch or more precipitation on sixty-six days. Of these sixty-six days, rain occurred on fifteen days and snow on fifty-one days. Many of the rainy days were partly snowy.

The porous nature of the soil enables the rainfall to be rapidly absorbed, and many walks and drives are much pleasanter just after a rain. There are only a few clay beds in the Adirondacks and throughout this whole region there is but little soil of such a character as to retain moisture. A region of numerous bodies of water in the form of mountain lakes, with rocky shores and sandy beaches, differs materially, climatically considered, from a similar region with a heavy soil, retaining moisture.

Fogs and mists vary much with local conditions. In some localities they occur rarely; in others, along the rivers and on the lake shores, they are of more frequent occurrence. However, even where they occur, they are rarely seen except in the early morning hours. In the intense cold of winter, mists are seen occasionally along the unfrozen parts of the river.

The barometer readings for thirteen months show a mean monthly average of 28.412 inches. The highest monthly mean was in June (28.55), the lowest in February (28.22). The readings were taken indoors at an elevation of 1,550 feet.

September	28.521
October	28.377
November	28.405
December	28.160
January	28.331
February	28.224
March	28.373
April	28.400
May	28.460
June	28.547
July	28.435
August	28.412

The Sky.—The average number of clear days is 121.9, or 10.2 days per month. They are distributed as follows:

January	8.8
February	7.6
March	8.6
April	11.0
May	13.0
June	13.3
July	11.2
August	12.0
September	12.7
October	10.7
November	6.7
December	6.3

The number of clear days was larger than I supposed and compares very favorably with most "cool, moist climates."

The number of cloudy days slightly exceed the number of clear days and are 128.9 days per year. They occur as follows:

January	14.1
February	12.6
March	12.2
April	10.5
May	8.4
June	6.0
July	6.3
August	5.7
September	8.2
October	12.4
November	15.4
December	17.1

From this it is seen that the number of cloudy days is quite high, but on the other hand the

number of partly cloudy days is very small. The greatest number of cloudy days occur in November, December and January. The partly cloudy days number 114 and vary from 7.5 days in December to 13.5 days in July.

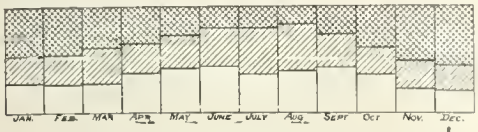

CHART 3.—PERCENTAGES OF CLEAR (BLANK SPACES); PARTLY CLOUDY (SINGLE HATCHING); CLOUDY DAYS (CROSS HATCHING).

The average percentage of possible sunshine for the last few years is 46.2 per cent. and is distributed as follows:

January	25.8
February	35.7
March	46.0
April	55.5
May	71.8
June	46.2
July	55.0
August	46.3
September	65.1
October	36.2
November	41.3
December	29.7

These records cover too short a time to be of value. The high percentage for May was due to the fact that last year a severe drought extended throughout the spring months.

Temperature alone, as is well known, does not express fully the effect of local conditions on persons of varying temperament. Coming to the Adirondacks regularly in summer from any of the cities of the Atlantic Coast one is impressed by the coolness and the amount of energy one feels like expending. In nearly all cases warmer clothes have to be worn. Permanent residents of the region seem to feel a slight rise of temperature in the summer much more than the visitors.

The purity of the air can almost be said to be a *sine qua non* of a pulmonary health resort. Many resorts, no doubt, owe much of their beneficial influence to this quality of the air. In general, the greater the elevation, the greater is the purity of the air. But other factors have to be considered, and among these are the density of the population, smoke, the velocity and frequency of the wind, and the condition of the soil. The first point is well illustrated by the following figures:

In London the number of solid particles in each c.c. of air is from 80,000 to 210,000, while that of the western highlands of Scotland is only 16.

The amount of dust in the air and ceteris paribus, the number of micro-organisms, depends largely upon the wind and the condition of the soil. The greater the velocity and frequency of the wind, the greater the quantity of the dust. For this reason forests which break the winds and which prevent them from reaching the soil are very valuable in preventing dust. Snow, too, is most valuable for this reason, for when the ground is covered with snow, there can be little or no dust. Rain, as has been often stated, is valuable both for precipitating impurities in the atmosphere and for preventing dust. No one, I think, will deny that the atmosphere in the Adirondacks with its 145 days of precipitation is well cleansed. From what has been said it can be easily seen that the greater part of the Adirondack region is wooded and has its climate modified accordingly. Further, the ground is covered with snow for a little over four months each year. The prevailing winds in the region about Saranac Lake are from the west, but with the exception of a few days in the spring and fall the wind causes little inconvenience to one leading an outdoor life. In summer on the eastern shores of the many lakes the cool breezes over the water modify the midday temperatures and are always refreshing, making the shores several degrees cooler than elsewhere in the same region.

In conclusion, it may be said that: (1) The climate of the Adirondack mountains is cool and moist during seven months of the year; cold and dry during five months. (2) The entire region enjoys freedom from dust and disagreeable winds. (3) The number of clear days is small, the number of cloudy days excessive, and the number of partly cloudy days much below the general average.

In closing, I wish to express my thanks to Dr. E. R. Baldwin, who recorded the weather observations for five years, and to Dr. Dutton and Mr. C. W. Mills.

Adirondack Cottage Sanitarium.

THE BIOLOGICAL INTERPRETATION OF CANCER.[1]

BY ALEXANDER SPINGARN, A.M., M.D.,
OF NEW YORK.

THE cellular theory of Virchow removed pathology from the domain of mystery and placed it within the realm of natural phenomena. It is to the science of biology that the students of disease now look for the laws that govern morbid processes. Can biology furnish a satisfactory explanation of cancer? This question is directed to the botanist and zoologist rather than to the pathologist and clinician.

The founder of modern pathology attributed disease to perturbations of the normal cells of the body. The bacteriological school, headed by Koch, have indicted the germ as the main culprit responsible for those changes in the activities and relations of cells which are recognized as disease. Hence a host of workers are looking for the special parasite of cancer.

The quest of this parasite, encouraged by success in cognate fields, must be lauded. Yet even if this attempt be successful, the discovery of the cancer parasite will no more explain the real cause of this disease than the bacillus of Koch reveals the genuine cause of tuberculosis. Prud-

1 Received for publication June 6, 1904.

den has ably emphasized the importance of viewing the microbe as the exciting and not as the efficient cause of disease.

In seeking the explanation of various natural phenomena pertaining to life, an appeal must be made in the long run to broad general biological laws. Of these, one which has unlocked many a mystery of science is the modern doctrine of evolution. Let this be applied to pathological as well as physiological phenomena, and in the present instance, to the problem of the origin of cancer.

The two important factors in evolution are heredity and variation, the latter including also the process of natural selection. These factors have been chiefly emphasized in the production of distinct types and species of animals. In no less degree have they been instrumental in establishing the form and type of the tissues and organs of the animal body.

The cancerous growth consists of the normal cells of the body, which have undergone an unlimited proliferation. Ribbert has beheld in this excessive multiplication of the cells an evidence of the loss of certain restraining factors whose influence is constantly felt in the normal body. As to what these restraining influences are or how they operate no suggestion has been made.

The real explanation of cancer should rather be sought in the laws that govern the growth and multiplication of cells. "If any one will tell me," says Prudden, "by what arrangement of cell mechanism, by what disposition of cell impulse, under what direction of heredity or environment, the various cells of the normal body go on growing, multiplying, taking on new forms and functions, framing new tissues, from the time the original cell ceases to be an egg and becomes an individual, until full maturity of the body is attained, if any one will tell me this, I say, and then tell me why at maturity this tissue growth ceases, why these new adventures in organ-forming stop and from maturity until the worn-out body is ready for the grave only those growths and replacements occur which are demanded by the exigencies of nutrition or accidental emergencies, I will agree to hand him back his lore as a fair clue to, if not an exhaustive exposition of, the origin of tumors."

The law of growth, so far as it is dependent upon the size of the cell, has been firmly established. The theorem of solid geometry that the surface of a sphere increases as the square of the diameter, while the volume increases as the cube of the latter, has been applied to the mechanics of the cell. As the cell grows its volume increases more rapidly than its surface. The nutrition of the cell depends upon its capacity to absorb. A stage is reached when the surface of the cell is incapable of absorbing sufficient nutriment for the cell-body, with the result that there is impaired nutrition, a weakening of the middle zone of the cell, a diminished resistance, with a resultant splitting along the weakened zone, which phenomenon is known as cell-division. This process is therefore dependent upon the ordinary laws of physics and geometry. But the latter determine only the limits to which a cell may grow. The absolute size of a tissue or organ, however, is dependent also on another factor, namely, the power or extent of multiplication possessed by the constituent cells.

At this point the law of evolution may be applied. This law has determined the absolute size of the various organs and tissues. While those organs whose size was inadequate to serve the needs of the body have caused the individual to succumb in the struggle for existence, so also organs which had a tendency to attain too great a size have proved a disadvantage to their owner. In the evolution of the complex multicellular organism, with the increasing perfection of physiological division of labor, there has resulted a fine adjustment of tissue to tissue and organ to organ. The health of the entire body would be an expression of the harmonious cooperation of the mutually interdependent members of the vital community, and might be termed an organic equilibrium. The researches of Jacques Loeb have shown that each tissue depends for its health upon the chemical equilibrium of its immediate environment. For example, the normal muscular contraction and the normal rhythmic beat of the heart are each dependent upon the delicate balance of inorganic salts in the surrounding medium, the blood. If one or more of these salts be increased, diminished or removed, there results a disturbance or an arrest of function. In a similar manner the nice equilibrium of the entire vital mechanism may be disturbed or even destroyed by the incomplete or excessive development of any one of its component parts. For instance, an excessively large heart would lead to inordinate arterial tension with consequent arteritis and possible rupture of the vessel. A similar tendency to proliferation and hypertrophy in the various tissues would lead to embarrassment of function. A familiar example of unchecked growth of a particular tissue is seen in lipomatosis or obesity. And just as the pathological, diffuse accumulation of adipose tissue hampers the workings of the bodily machinery, so a localized fatty infiltration of a particular organ (*e. g.*, the heart), compromises its efficiency. Moreover, one must not overlook the fact that a tissue which has acquired excessive proportions is apt to undergo, as the result of the failure of the body to supply adequate nutrition, degeneration or necrosis. In this manner may be explained the atrophy following the various forms of muscular pseudo-hypertrophy, the failure of compensation in an hypertrophied heart and the ulcerative transformation of malignant neoplasms. In the organic community overgrowth of any of its members is fully as disastrous as deficient growth. In the throes of the struggle for existence each tissue or organ has approximated, within certain narrow limits of conformation and size, to its ideal, or so-called normal, type. Natural selection would, therefore, account for the limitation of the size of

the different organs and tissues, which limitation is perpetuated by heredity.

At the same time, while recognizing this result of natural selection, one must admit that under certain conditions there may occur an overgrowth of tissue, a purely physiological hypertrophy. This is of a compensatory nature, and of the numerous forms a few may be cited, as follows: Hypertrophy of the heart, consequent to valvular disease or nephritis; overgrowth of connective tissue in the arteries, resulting from excessive blood-pressure (Thoma); the overgrowth of muscles to meet the demands of excessive exercise; thickening of the epidermis from increased pressure; compensatory enlargement of one kidney, lung, or one cerebral hemisphere from absence or defect in the corresponding mate, etc.

The above examples show the plastic character of the vital mechanism, which unlike any other known structure, changes its size and power according to the demands made upon it. Structure and function may be mathematically expressed as the functions of a number of variables, such as use, environment, heredity, etc. "Life in all its forms," says Henry Maudsley, "physical and mental, morbid and healthy, is a relation; its phenomena result from the reciprocal action of an individual organism and of external forces; health is the consequence, and the evidence of a successful adaptation to the conditions of existence, and imports the preservation, the well-being, and the development of the organism, while disease marks a failure in organic adaptation to external conditions and leads to disorder, decay and death."

In this adaptive capacity of the individual tissues and organs is to be sought the secret of pathological hyperplasia. One may here allude to the conservative tendency displayed in connective tissue formation. The closing in and the final obliteration of a tuberculous cavity in the lung by connective tissue, is a familiar example. This conservative or protective tendency is again seen in those numerous forms of hypertrophy resulting from embarrassment of an organ or tissue. Thus results hypertrophy of the heart in adherent pericardium. The formation of callosities on epithelial surfaces exposed to constant pressure, is a case in point. If for any reason the cells of the tissues, as the result of some irritation, be prevented from exercising their proper activity, there is a tendency to increased cellular multiplication. This subject is closely connected with the fundamental problems of regeneration of cells and tissues. In his work "Regeneration," Morgan alludes to a phenomenon that most students of biology must have observed in the laboratory, namely, that starfishes sometimes replace one lost arm with two new ones. While it is true that in most cases the part which is formed by regeneration is identical with the part lost by mutilation, yet it would seem as if, in some instances, the forces, whatever they may be, that make for regeneration, are ever ready, upon the slightest embarrassment or injury of a part, to assert themselves with a momentum out of all proportion to the original loss. The application of this fact to the problem under discussion is plain. There are a number of protective mechanisms in the body which are probably closely related to the regenerative faculty. Thus the increase in the number of red blood cells that rapidly occurs when the individual ascends in a balloon or takes up his residence in the mountains, occurs in response to the deficient oxygenation attendant upon the rarefied air, the increased number of red blood cells enabling the body to get the normal supply of oxygen; in addition, each red corpuscle is larger. The erythrocytes are being constantly destroyed in the organism and constantly regenerated. Under normal conditions the power of repair proceeds at a rate which is just sufficient to keep the number of red blood cells constant or approximately so. Yet in response to the increased needs of the organism this regenerative capacity may be increased. It is conceivable that certain stimuli which have no relation to the needs of the body, might bring about this increased proliferation of red blood cells. The phenomena connected with the formation of cicatricial tissue serve to illustrate both the normal and the abnormal phases of regeneration. Thus, while the scar-tissue is ordinarily just sufficient to close up the wound and in this respect represents the normal type of regeneration, yet, under certain conditions not yet understood but probably consisting in abnormal irritants or stimuli, the cicatrix may become excessively large and troublesome, constituting what is known as keloid. The formation of exuberant callus in fractures is another instance of this same extravagant and riotous regeneration.

The leucocytosis that occurs in inflammatory processes is probably fundamentally akin to the above-described phenomena, being but an augmented and accelerated reproduction of white blood cells in response to bacterial and toxic irritants. This prodigal multiplication of leucocytes has been turned to good account by the organism in a protective way. The hyperplasia of the bone-marrow, spleen, and lymphatic glands, with the associated enormous leucocytosis that occurs in the various forms of leucemia, may be analogous to the above-mentioned types of unchecked and abnormal regeneration. It is quite possible that future investigations will show that the production of anti-bodies in the various forms of acquired immunity, is but a phase of the accelerated proliferation of elements normally present in the economy.

The formation of galls, tumor-like excrescences produced in plants by insect parasites, indicates regenerative phenomena analogous to those above mentioned. The presence of the insect stimulates the plant cells to multiply at an abnormally accelerated rate, with the result that a mass is formed which completely encapsulates the parasite. It is supposed that poisonous irritants secreted by the insect are the cause of this abnormal cellular growth. It is suggested by Darwin that possibly chemical compounds secre-

ted by plants under changed conditions of life, may cause eccentricities in the growth of various parts of the plant, similar to those seen in insect-galls. This phase of the problem under discussion invites thorough experimental investigation.

The explanation of these forms of hypertrophy may be sought in the fact that when the cells of a tissue are incapable, as the result of some irritation, be it chemical, parasitic or mechanical, of doing the work allotted to them, then these cells will proliferate, in order to produce other cells, the activity of which will make up for the embarrassed function. The rôle that mechanical irritation or traumatism plays in the etiology of malignant neoplasms has not been overestimated. The possibility that chemical or toxic irritants, the result of faulty metabolism, may act as tissue irritants in this respect, must be considered.

August Weismann, in his fascinating book, "Essays on Heredity," speaks of the inherent immortality of the cell. The lowly animal organism, consisting of a single cell, endowed with the unlimited capacity to subdivide, knows not death. It is only the multicellular animal in which immortality has been restricted to the reproductive cells. Death is the result of natural selection. Possessing originally an infinite capacity to subdivide, the cells of the body have eventually acquired a finite existence, and the entire body itself has been doomed to death, as the result of the struggle for existence between the individual cells, as well as between the different animals. The cessation of life is an adaptation to the conditions imposed by the crowding of cells and animals, with the consequent reduction of the means of subsistence. The reason, therefore, why a particular tissue keeps on growing until it has reached a certain size and complexity, and then stops growing, is thus easily explained on the basis of an adaptation to the functional and nutritional needs of the living environment. But the tissue never forgets its birthright. Endowed with a capacity to grow which has been stilled by the needs of the organism, this capacity of the tissue is again awakened whenever anything tends to embarrass or limit the activity of this particular part.

"It is rather a matter of surprise," says Prudden, "that ever-changing, self-regenerating living tissue does not oftener go astray in its activities than that it only now and then should do so." May not the proliferative aberrations in cellular life be compared to the numerous examples of reversion to an ancestral type familiar to the student of zoology? The reversion in this case would be to the habits of the cells at the dawn of life, either of the race or of the individual, when self-multiplication was the most prominent phenomenon in cellular activity.

That there is some ground for believing in the atavistic origin of new growths is indicated by the recent researches of Farmer, Moore and Walker, reported to the Royal Society. These investigators detected in the depth of malignant tumors certain peculiar cells which are exactly like those that are formed during the early stages of division of the germinal epithelium, resembling the latter in having but one-half the usual number of chromosomes in the nucleus. This observation does not necessarily confirm Cohnheim's hypothesis of the embryonal origin of tumors, namely, that certain displaced embryonal cells, when the conditions are favorable, are prone to multiply with all the energy characteristic of their prototypes, for the authors have not been able to cause the development of new growths by transplanting portions of ovarian or testicular tissue to different parts of the body. It indicates rather that in the course of the mitosis of highly differentiated cells, some of the latter, by a peculiar process of cell-division, may revert to the primordial condition of the cells in early embryonic life.

In discussing the proximate causes of reversion, Darwin states "that any change in the habits of life apparently favors a tendency, inherent or latent in the species, to return to the primitive state." If this is true of the entire body, it is probably also true of the constituent cells. That the highly differentiated somatic cells should inherit the remote ancestral traits of the undifferentiated germinal cells, in most instances, only during the latter part of the individual's life, is in line with some of the well-known phenomena of atavism. "Thus," says Darwin, "the calves of a hornless race of cattle which originated in Corrientes, though at first quite hornless, as they become adult sometimes acquire small, crooked, and loose horns; and these in succeeding years occasionally become attached to the skull." Other instances of the incidence of atavism during advanced periods of life are cited. What is still more interesting is the observation that frequently this tendency to reversion may become hereditary.

The question now arises, namely, how can one reconcile with the atavatic conception of cancer the hypothesis that the abnormal and excessive proliferative activities of the cells seen in neoplasms, are the result of changes in the environment, *e.g.*, irritation. The explanation seems to be close at hand. All physiological manifestations occur in response to some external stimulus. Life is but a series of reactions of a collection of unstable compounds known as protoplasm to external forces. Every pathological manifestation is likewise to be attributed to some external stimulation. In the production of vital manifestations the play and counter-play of numerous forces must be borne in mind. Factors such as heredity, nutrition, climate, crowding, etc., all share in the elaboration of the finished living product. Would it seem so strange, therefore, that the normal, modest deportment of the bodily cells, in keeping within the strict limits decreed by the struggle for existence, should at times be upset by some new factor that disturbs the peace of the vital community? Just as a severe psychic cataclysm may transform the highly civilized individual into a

savage, so an unusual stimulus or a congeries of stimuli may excite certain bodily cells to assume the habits of their primitive ancestors. In cancer the stimulus may be a jagged tooth, a traumatism, a long-continued ulceration; it may be some chemical poisons originating in the wear and tear of the tissues, and only effective after years of accumulation (hence the incidence of cancer during and after middle life); it may be that the law of habit exhibited so powerfully in the life of the cells, decrees that when the units of protoplasm belonging to a certain lineage have frequently responded in the past to various stimuli by taking on an abnormal proliferative activity, then the cells of the same lineage will be prone to respond in a similar way in the future. Thus the rôle of heredity in cancer may possibly find its explanation.

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APPENDICITIS: PATHOLOGY AND SURGICAL TREATMENT.[1]

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The fascination of abdominal surgery and the brilliant results achieved stimulates our attention to the importance of appendicitis. As its etiology and pathology have been more closely defined, so has its treatment advanced, and the morbid specimens removed frequently afford an opportunity for interesting study.

It is axiomatic that no surgical procedure should be advised or adopted except there be a reasonable hope that it will result in cure or marked relief to the patient. Moreover, I desire to emphasize the fact that needless delay in operating is a factor leading to increased mortality; unfortunate results have followed operations performed as a last resort. The diagnosis having been made, surgical rather than medical care is demanded.

We know nothing definite as to the pathological process which would warrant delay in operating; were surgical intervention a prompt procedure, that is, operation on the first or second day of the attack, practically all cases of appendicitis could be saved. In every fatal case of appendicitis there has been a period in which the patient could have successfully undergone the operation. There is no other major surgical operation which is so reasonably sure of success, symptomatically as well as surgically, after early operation and when prompt interference means as much to the patient.

In a series of fourteen cases of appendicitis, of varied type, in which I have been called upon to operate within the past six years, it was my misfortune to lose two. These, however, cannot be attributed to the operator, they being operations of emergency—suppurative and perforative, and which I was called in haste to perform out of the city. Were it a question of a surgeon's percentage, mortality and recoveries, my better judgment would have dictated not to operate in these cases; it was the desire of the attending physicians and the parents of both patients that I should give the possible chance, which I proceeded to do. In operations of emergency, even though death be invited, one cannot always decline to operate.

The two cases in which death occurred are of interest. In one, a girl aged thirteen years, the disease was fulminating in character, of but three days' duration. The appendix was of a diameter of one's thumb, gangrenous and sloughing at its base, with honey-combed pus pockets and adhesions profuse; septic peritonitis was in evidence. A hard fecal endolith, the size of an orange seed, was found in the middle third of the appendix, a condition which in the early days of appendicitis had given rise to the theory of orange, lemon or cherry pits as the chief factor in etiology.

The other case, a young man aged nineteen years, temperature 103° F., was what I term one of sacculated suppurative appendicitis, an appendiceal abscess with protective adhesions, in which I removed fully a quart of fetid pus. The abscess cavity was thoroughly irrigated with hot normal salt solution, drainage being continued by means of iodoform gauze strips carried through an opening left unsutured in the abdominal wound, the sac not being removed.

This case was certainly a remarkable instance of appendiceal abscess with protective adhesions, in which the sac contained a quart of fetid pus, which had been forming for some days. The patient's vitality was at a very low ebb at the time of operation. In this instance is emphasized what I have already referred to, the fact of needless delay in seeking operative interference.

Regarding the cases in which recovery ensued, several are of interest pathologically and because of attending complications. In one, there was associated intestinal obstruction, a loop of the ileum within a foot of the ileocecal junction, being found strangulated and cyanosed by a fibrous band one inch in length and the diameter of a goose quill, running from the stump left of the broad ligament, following an oophorectomy eight years previously, to the middle portion of an elongated and inflamed appendix. The fibrous band was ligated with catgut at the old stump, and the appendix including the band ligated with silk and removed, the patient being subsequently entirely relieved of all untoward symptoms. The diagnosis in this instance was one of intestinal obstruction with probable appendicitis, the patient having presented symptoms of the former especially only three days previous to operation.

A second case, a young man aged twenty-eight years, was of rapid development. The appendix was acutely congested and in part gangrenous, bordering on perforation near its apex; temperature 102.4° F. at the time of operation. The omentum was much injected and in great part adherent, a portion of it being ligated and removed;

[1] Read at the Third Annual Meeting of the Atlantic Coast Line Surgical Association, Jacksonville, Fla., November, 1903.

the appendix had a broad base with firm mesentery attachment.

Two cases were complicated with right interstitial salpingitis, the appendix and the fimbriæ of the tube in each instance being intimately adherent. The right tube and ovary as well as the appendix were removed in both cases; and in addition, in one of these I performed a myomectomy for subserous fibroma, the size of a lemon, located on the posterior wall of the uterus. Not infrequently we find the appendix unusually long and adherent along its whole length to the cecum, and even curving around the latter. In such instances it is by no means an easy matter to free the appendix from its attachments.

Silk is the material which I always use as a pedicle ligature; I have never departed from it; furthermore, I always make positive that my ligatures are both well placed and reinforced, to avoid any possibility of secondary hemorrhage.

Regarding pathological changes in the appendix, the investigations of Fraser after repeated experimentation upon rabbits, have given the following results:

1. Suppurative appendicitis ensued as a result of obstruction of the lumen through aseptic ligation of the appendix.

2. Closure of the lumen in regard to the virulence of infective germs normally contained in the appendix, proved that such is capable of converting an inoffensive into a most virulent organism, the post-mortem findings showing also marked pathological changes in the walls of the appendix, gangrene being present in a portion of the cases.

3. Closure of the lumen, a foreign body being contained therein, gave results identical with No. 1.

4. In the unobstructed lumen a virulent culture in the presence of chemic irritation gave a negative result; as did also a virulent culture in the presence of a foreign body.

5. Ligation of the vessels produced marked structural changes, undoubtedly due to a lessened resistance whereby an infection, which otherwise would be innocuous, obtains a permanent foothold. Foreign bodies do not cause appendicitis unless infection ensues, and only become a menace when associated with obstruction of the lumen.

As regards the pain in appendicitis, Tripier has formulated the law, confirmed by experience, that none of the affections of the abdominal viscera are accompanied by attacks of pain unless the surrounding peritoneum is involved in some acute or subacute inflammatory process, and that the pain is more intense the smaller the quantity of the fluid exudate. Considering the variations in the position of the appendix a constant pain at McBurney's point is not to be expected. One should be guided by the severity of the symptoms present, ignoring the absence of symptoms usually present.

Elevation of temperature, while a necessity to diagnosis, is no indication of the degree or extent of the pathological process. Preconceived ideas based upon experience often prove valueless, as a positive opinion prior to operation cannot be given as to location, attachment or condition of an appendix.

BEGINNING GENERAL PARESIS, ITS RECOGNITION AND MANAGEMENT.[1] [2]

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A DISEASE which has as its result the desolation both mental and physical of its victim, would seem to call imperiously for early recognition and treatment, to the end both of staying its progress as much as possible, and of forestalling the dangerous consequences to family and community resulting from the foolish, reckless, and often violent actions of a person impaired in his powers of self-control, reason and judgment. Such a disease we have, in that chronic degenerative affection of the nervous system, known as dementia paralytica, the progressive paralysis of the insane, general paralysis or general paresis.

While probably not a new disease, its recognition as a clinical and pathological entity dates back only about eighty years, and even to-day there are some authorities who maintain the idea of its duality, as Regis when he speaks of paralytic dementia, and paralytic insanity. It was formerly regarded as quite rare, a case in this institution having been visited as a curiosity as recently as thirty-seven years ago.

This is hard to understand, in view of its prevalence to-day, for unhappily it seems to be growing in frequency. Statistics vary considerably, but the following from the Vienna State Asylum are most striking. In 1838, general paresis constituted 12.6 per cent. of all the cases admitted; in 1867 the figure had risen to 18 per cent.; while during the ten years ending in 1897, it had reached the proportion of 30 per cent. of the total admissions.

In this country it is undoubtedly less frequent, its proportion to all cases of insanity being stated at from 6 to 10 per cent. In the New York State institutions, it constituted in 1901 8.6 per cent. of 4,916 admissions, while in 64,609 admissions, since 1888, it was present in a trifle over 7 per cent. of the cases. The disease is much more common in an urban than in a rural population, and many more men than women are affected, though this latter varies from a proportion of two men to one woman in some parts of Russia, to one to seven or one to ten in this country, while in an entirely rural population the disproportion may be even greater. Among women of the better class it is relatively rare.

General paresis has been pithily styled by Krafft-Ebing, a product of "civilization and syphilization," and in its production syphilis

1 Read at a meeting of the Mercer County Medical Society, March 8, 1904.

2 Received for publication April 5, 1904.

seems to play a most important if not the chief rôle, the number of cases in which previous syphilis can be shown being estimated all the way from 25 to 90 per cent. Abuse of alcohol is undoubtedly an etiological factor, but its importance is much disputed. Alcohol carries in its train its own special forms of mental disease, among them one which closely resembles general paresis. It certainly does act as one of the sources of overstimulation of the nervous system, and in its not uncommon association with syphilis it may have a decided influence. However, as one of the early symptoms of general paresis is a tendency to indulge in alcoholic, as well as in other excesses, there is liability to confound cause and effect.

Heredity for insanity or nervous disease may have an influence, though as to this again opinions diverge widely. The modern struggle for existence with its tendency to produce both mental and physical stress, through overwork, excitement, and intemperance in eating and drinking, appears to be chiefly responsible for the increase in general paresis. These comprise the main causes of this disease. General paresis, however, cannot be considered a direct manifestation of brain syphilis, for while its lesions are of fairly definite character they differ from those of syphilis proper. It can at best be considered like tabes, a metasyphilis. The ravages of the disease are not confined to the brain, but may extend to any part of the nervous system, and after death other organs are also found to be affected. It is doubtful, however, if the latter lesions should be considered as properly belonging to general paresis.

In a disease of so varied and irregular distribution, it is small wonder that a complex clinical picture should be presented. Broadly speaking, however, the two features which stand out are progressive mental failure, and paresis of muscles, more or less extended. It is a disease preeminently of the prime of life, men from thirty to fifty years old being its chief victims. It is not unknown outside of this period of life, however, and the juvenile cases especially seem to be growing in frequency. These nearly always occur in the victims of hereditary syphilis. Cases have been reported at as early a period as ten years of age, while in the seventh decade the disease is not unknown. No grade of society is immune, for it attacks high and low, among both preferring those of convivial habits, in whom syphilis and alcoholism are apt to be present. In the great majority of cases the disease begins slowly, and there is a period more or less prolonged, during which the patient's mental condition seems to be undergoing a change, though perhaps definite derangement is not apparent. The victim may show more or less marked exaltation of spirits, with abandonment of care, excitability with irritability and restlessness, or, on the other hand, vague depression and fears, or hypochondriacal ideas. As a rule he sleeps badly.

Again, the first symptom to be noticed may be a change in conduct. The previously sober, moral and prudent man plunges into alcoholic and sexual excesses, squanders money in unnecessary, foolish, and extravagant expenditures, and may even resort to trifling fraud or theft to obtain articles which he could perfectly well procure in a regular way. In form the disease varies greatly, and these variations overlap one another, but in practice it is usual to recognize three general types:

1. *The Dement Type,* in which the symptoms are those of a progressive mental failure without marked depression or excitement, or definite delusions.

2. *The So-called Classical Type,* where there is exaltation and excitement, with increased feeling of well-being (euphoria), rising to grandiose delusions, such as of unrivaled strength, fabulous wealth or supreme power. The patient has begotten 1,000 children, owns millions of money, is king of kings, etc.

3. *The Melancholic Type,* characterized by depression, sleeplessness and hypochondriacal ideas. To these are sometimes added an agitated, periodical and ascending type, the second being characterized by changes of mood from excitement to depression and vice versa, and the last beginning like tabes, with loss of power in the legs and ataxia.

One and all, however, proceed ultimately to the same issue of dementia, ending in death in marasmus, unless the victim is cut off by some intercurrent disease, or dies in a convulsive seizure. The dement type has of late years been growing more common, and to-day is by far the most frequent, the classical form being the exception rather than the rule. For the general practitioner, however, it is the first stage of the disease which is of importance, for he it is who sees the patient at this time, and if he recognizes the probability of what is to come he may be able to preserve the victim from courses which can only hasten the fatal outcome, and to protect the family from the humiliating, indeed, often the tragic results, of the misconduct of its now irresponsible head. The public, too, is to be considered, for instances of swindles, great and small, of abuse of authority on the part of military and naval officers, or of judges or others in high positions, of criminal assaults, and even of murders, by persons in the early stages of general paresis are unfortunately far from rare.

What are the earliest symptoms? There is no one which taken alone is characteristic, but a probable diagnosis is to be based upon the combination of certain mental and physical changes, with due consideration of the age of the patient, his position in society, and his previous history, especially as regards the likelihood of former syphilitic infection.

As a general proposition, in any mental disturbance arising in a man between the ages of thirty and fifty years, who has no history of having shown mental unbalance earlier in life, the possibility of the case being one of general paresis should at once present itself. If there is a clear

history of previous syphilis, the possibility becomes a probability. In women of corresponding age the idea of general paresis does not suggest itself so prominently, but, nevertheless, the social position and previous life of the patient is to be taken into consideration, and with the history of exposure to syphilization the probability of general paresis becomes strong.

We have under observation at present an interesting instance of so-called conjugal general paresis. The husband was admitted suffering from general paresis, within the year the wife following him with the same disease. Each presents an example of the dement type, but in the case of the woman, the disease is running a more rapid course than in that of the man. The history is fragmentary, but the woman has on her lip a well-marked cicatrix, possibly the former seat of a chancre.

The further removed from the age limits mentioned the patient may be, the less the probability of the disease, though it is not excluded, as both juvenile and senile cases of paresis are not unknown. From what has been said above, it will appear that the mental symptoms of general paresis vary widely, and to make a diagnosis from them alone is seldom possible. Whether the patient is depressed or exalted, or exhibits expansive delusions, with or without motor excitement, there is generally, however, an underlying defect of intelligence, shown in loss of memory and power of judgment, which, though it may be difficult to elicit, can usually be brought out by careful questioning. Delusions when present are not built up logically—though from false premises—and defended with plausible arguments, as in the case of the paranoiac, but are unsystematized, changing from hour to hour, and often at once suggestive by their immensity and grotesque absurdity. Hallucinations are exceptional and there is lacking the true maniac's rapid flight of ideas. Upon the combination of somatic signs with mental symptoms, however, we depend for the differentiation of general paresis from other forms of insanity.

At this point it is well to emphasize the fact that by general paresis or general paralysis, we mean a definite disease involving both mental and physical spheres, in persons at the prime of life, and not the gradual loss of power often with mental failure observed in old people, generally as a result of arteriosclerosis, and consequent nutritional changes in the brain. This distinction, there is reason to believe, has not always been made with sufficient sharpness, by the profession in general. As was stated above, paresis of muscles more or less extended is to be considered as an essential feature of the disease. This shows itself in the inability to perform certain functions properly. The symptoms most likely to be found in the earliest stages are alteration of the knee-jerk, failure on the part of the pupil to react for light, and optic atrophy. A combination of one or all of these with mental change, provided its presence cannot be explained on other grounds, makes the diagnosis practically certain. It will be noticed that the eye symptoms with loss of knee-jerk are indicative of locomotor ataxia, and in fact an exceedingly close relationship exists between this disease and general paresis. Both seem to follow, in the vast majority of cases, a syphilitic infection more or less remote. Both attack especially men in the prime of life, but in the one the somatic symptoms are predominant, and the mind may remain clear, while in the other the mental symptoms soon come to the front. The question of the relationship of these two diseases is interesting and much discussed, but cannot be entered into here. Suffice it to say that while mental symptoms may occur both as a result, and as an accidental complication of tabes, a middle-aged person showing mental alienation, with loss of knee-jerk and of the pupillary light reflex is in the vast majority of cases afflicted with general paresis. The ataxic symptoms may long antedate the mental change, as shown in the case of a man thirty-five years of age, recently observed, who presented a characteristic picture of tabes, and had his complaint so diagnosed by a number of physicians, nearly three years before the advent of definite mental symptoms, the onset of convulsive attacks, and speedily developing marasmus made the diagnosis clear. On the other hand in a man demented since a psychosis in early life, tabes developed just beyond middle life and he died after thirty-seven years' residence in the hospital at the age of fifty-nine years, having at no time shown the picture of general paresis.

It must be remembered, however, that loss of knee-jerk may be due to any lesion which interrupts the reflex arc for the qudriceps extensor, whether situated in the muscle itself, in the nerve, or in the lumbar enlargement of the cord. It is a common symptom in multiple neuritis, and occurs in myelitis of the lumbar segments, and in some brain tumors. Again the knee-jerk may be sometimes lost in diabetes, and in Bright's disease. In the majority of cases of general paresis, however, the knee-jerk is exaggerated, on one or both sides. This exaggeration is of much less diagnostic value than loss of knee-jerk, since it may be present in a number of other conditions both functional and organic, and when not too marked is not a symptom of great importance. In not a few cases of general paresis, there is degeneration of the lateral columns of the cord, as in spastic paraplegia, and again both lateral and posterior columns are affected.

Where loss of visual power is apparent, an ophthalmoscopic examination should be made—if necessary by an eye specialist—for optic atrophy is an important symptom in this connection, provided its other causes can be eliminated. The characteristic pupillary anomaly is failure to contract for light, while contraction for accommodation remains. This condition known as the Argyll-Robertson pupil, is very suggestive, and may be present long before other symptoms are manifest. In a study of 17,000 patients, Thompsen, of

Bonn., found that of those showing the Argyll-Robertson pupil, 90 per cent. either had tabes or general paresis. Some caution is needed, however, in eliciting this symptom, the light should be good and should fall evenly upon the eyes. The presence of an old iritis which has caused adhesions, and interferes with the enlargement of the pupil, would be shown by its irregular outline. Difference in size of the pupils is also a sign of some importance, but of much less value than immobility, since slight differences are not infrequently congenital, or again are due to changes in the sympathetic innervation or to bygone iritis. The immobile pupil is generally a narrow one, although not always. In young, anemic, and nervous persons, the pupil is wide as a rule, but it tends to become narrower as age advances.

The earliest symptom of impairment of muscular power is incoordination, as shown by tremor and inability to perform certain movements. Specially characteristic are the disturbances of speech, and of handwriting. The speech disturbance, which is due to the incoordination of the muscles of the tongue and lips, consists in inability to properly bring out and combine syllables into words—the "syllable stumbling" of the Germans, for instance, instead of artillery the patient may say "ratrillery," etc. Syllables may be left out, slurred, or transferred. Where the patient's memory has become very defective, he cannot remember a word long enough to repeat it after another person, but may bring out only the first syllables. The voice is apt to become monotonous, and its pitch may be changed, generally lowered. As the patient tries to speak, there is often observed, what Clouston calls "the fatal tremor," about the lips, which is very characteristic. Speech can best be tested by asking the patient to repeat after you such words as abnormality, artillery, truly rural, etc.

Disturbances of handwriting which may occur comparatively early, are due to muscular incoordination, and to failure of memory, lack of attention, and indifference on the part of the patient. Berkeley declares that the first irregularity is apt to appear in the upstroke of the letters, which tends to present a sawlike edge. The letters are also apt to be uneven in size, and not in the same horizontal plane. Letters and syllables are left out, and blots are frequent. Defective innervation, and twitchings of one side of the face, paresis of the eye muscles, and so forth, have also some diagnostic value, but they also occur in other conditions, and their interpretation is attended with considerable uncertainty. In the developed disease, however, there is a heavy masklike expression, which is very characteristic.

Local anesthesias and paresthesias may also be present, but are not always easy to elicit. An old test for general paresis is inability to smell pepper. A symptom which does not properly belong to the early stage of the disease, but which is not infrequently the first thing to call attention to the serious nature of the case, is the occurrence of a paretic seizure. This, when it occurs in a case otherwise suspicious, clinches the diagnosis. It may take the form of a slight vertigo, easily mistaken for fainting, or may vary from a slight twitching of certain muscles, as of one side of the face or of one hand, to a general epileptiform convulsion. Again the attack may have an apoplectiform character, and be accompanied by rise of temperature, and congestive symptoms, and may leave behind a weakness of one limb or of one side of the body, which, however, generally clears up in a few days or a week.

The interpretation of such attacks is often difficult, but in a man in middle life, if previous epilepsy, trauma, alcohol or other poison and uremia can be excluded, and focal brain symptoms are absent, the probability of their paretic origin is very strong. Again, a paretic seizure, as a rule, differs from a true epileptic fit. The patient frequently does not entirely lose consciousness, and the convulsion is much more apt to be partial or Jacksonian in character. In an apoplectiform attack occurring for the first time some caution is necessary in forming an opinion. These comprise the chief symptoms to be expected in the early stages of general paresis. No one alone is characteristic, but two or three combined may enable us to form a positive opinion.

Practically the one disease from which it is most important to differentiate general paresis in its early stages, is neurasthenia, with predominant cerebral symptoms. This latter is also a disease of middle life. In it hypochondriacal ideas and depression, with loss of sleep, irritability, headache and vertigo, and tremor of the muscles of the face, tongue, lips and fingers may occur, as they do in general paresis. There may be reduction of mental capacity in both diseases, but in neurasthenia there is simply weariness, and no real mental failure. The neurasthenic will not present loss of knee-jerk, but rather exaggeration, and his pupils are not immobile. The neurasthenic as a rule feels worse in the morning, and improves toward night, while in the paretic, the reverse is the case. Lastly in neurasthenia there may be a history of a constitutional neurosis dating back to early life, while in the paretic there is apt to have been previous syphilis. Hoch states it as his opinion that of those breaking down from excessive stress, in the middle period of life, those who have had syphilis will probably develop general paresis, while those who are free from specific taint will be neurasthenic.

The two other conditions which are most likely to be confounded with general paresis, are cerebral syphilis, and chronic alcoholic insanity. In each there may be mental failure with or without delusions, convulsive attacks, and perhaps speech disturbance, and paralyses. Cerebral syphilis, however, as a rule, occurs nearer the primary affection than does general paresis, and headache and focal symptoms are apt to be present. Alcoholic pseudo-general paresis may resemble general paresis quite closely. The knee-jerk may be lost through an accompanying alcoholic neuritis, but the pupillary changes are generally wanting,

and under enforced abstinence, the symptoms are apt to clear up either wholly or in part.

To recapitulate briefly: Severe neurasthenic, or hypochondriacal symptoms, or any decided mental change coming on without known cause in a man from thirty to fifty years old, should be regarded as suspicious. If there was previous syphilis the probability of general paresis is great. If in addition there is immobility of the pupils, with loss of knee-jerk, the diagnosis is practically certain, while if to the above there are added the characteristic speech disturbances, and a convulsive seizure, there is no longer any doubt.

The diagnosis once established, the prognosis is of the worst, the fatal result being only a question of time. The average duration of a case of general paresis is from two and a half to three years. Some cases—the galloping form—run their course in a few months, however, while in others the disease extends over years. There is now under my care a typical case of the tabetic type, which has certainly existed for ten years, while a recent writer has reported a case which had lasted sixteen or more years. Again there are remissions which may extend over one or two years, during which time the patient seems almost well, and these probably have given rise to reports of cured general paresis. Unfortunately we have no specific treatment for the disease, and are reduced to treating symptoms as they arise. Its prevention is directly connected with that of syphilis, and with the thorough treatment of that disease when it occurs. The theory of an intoxication, or a disordered chemism of some sort as a causative factor, is held by some authorities, but our information on this subject is at present too meager to allow us to formulate an adequate line of treatment.

Bruce claims to have procured amelioration by injection into a paretic of the serum of another paretic who was in a remission. Donath says that he has produced marked improvement in six paretics by the injection of massive doses of a rather complex solution of salts, but these methods are not yet on an established basis. A course of antisyphilitic treatment may be tried, but has usually been found of little use, if not deleterious. General tonic treatment, with mild hydrotherapy, combined with measures to procure proper sleep, may be of benefit.

The chief duty of the physician, however, is to guard the patient from alcoholic and sexual excesses, and to see that his strength is in every way husbanded, and that he is kept from excitement and worry. In a family which can afford to pay for a trained attendant, a case of the dement type may possibly be managed at home, but early interment in a good institution, under constant and intelligent care, is by far the safest and cheapest measure. Even for a case with severe neurasthenic symptoms, where the diagnosis is in doubt, a sojourn in a sanitarium, where restorative treatment can be carried out and where precautions against any eventuality can be taken, is strongly indicated.

THE BACTERIOLOGY OF PANOPHTHALMITIS.[1]

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FROM the observations of several investigators, it seems an established fact that Fraenkel's pneumococcus is the most frequent cause of panophthalmitis. While in some cases a mixed infection of pneumococcus and staphylococcus or pneumococcus and streptococcus has been found, the pneumococcus is probably the essential etiological factor.

Gaspanini, Uhthoff, Hansell, Bocci, Mündler, and Schwartz have all obtained such results. Hirota has reported three cases of panophthalmitis, all of which he ascribed to the pneumococcus. The first case was one of hypopyon keratitis with perforation and panophthalmitis and mucocele. Twenty-four hour cultures showed numerous pneumococci and few staphylococci. One-half c.cm. of pneumococcus bouillon injected into a white mouse caused death in twenty-four hours: Pneumoccocci were found in the blood. One-half c.cm. of staphylicoccus injected into a white mouse caused death in thirty hours. Nothing was found in the blood. Cultures two weeks later produced the same result.

In the second case, there was a mucocele. Cataract operation was followed by wound infection. Cultures showed pneumococci and few staphylococci. One-half c.cm. pneumococcus bouillon injected into a white mouse caused death in twenty-two hours. Injection of staphylococci had no effect. Three weeks later, pure cultures of pneumococci were obtained. In the third case there was also mucocele. Pure cultures of pneumococci were obtained, which, when injected into a mouse, caused death in twenty-two hours. From the pure culture of the pneumococcus in one case and from the results of animal inoculation, the author concludes that the infection by the pneumococcus is the essential cause of panophthalmitis.

In all three of his cases a mucocele was present in which he claims is often found pneumococci. As is well known, this organism is the most frequent cause of ulcus serpens corneæ. In the last few months two cases of panophthalmitis have been examined bacteriologically at the Presbyterian Eye, Ear and Throat Hospital. The first case was wound infection and panophthalmitis following cataract extraction. The operation was performed under the usual antiseptic precautions on a colored man who some weeks before had had an attack of pneumonia and had apparently entirely recovered. There was no mucocele, the conjunctiva appeared healthy, and the operation was perfectly satisfactory.

The next morning, less than twenty-four hours after the operation, the wound was seen to be infected and the eye was soon full of pus. Smears from the pus showed scattering diplococci. Twen-

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ty-four hour cultures revealed diplococci in abundance. Three c.cm. of a bouillon culture were injected into a guinea pig. The animal died twenty-two hours later and smears from the heart's blood showed encapsulated pneumococci. Cultures from the other eye and from the blood were negative as to the presence of the pneumococcus. Later cultures were always pure pneumococci. In this case the pneumococcus was certainly the direct local cause of the infection.

The other case was Panophthalmitis from a knife injury. Smears from the pus showed nothing. In twenty-four hour cultures pneumococci and staphylococci were found. Inoculation experiments on guinea pig gave pneumococci in the blood. In this second case the essential cause seemed to be due to the malignant pneumococcus. The results confirm those of the authorities named above. Dr. Darling, of the city health department, has recently informed me of a case of panophthalmitis caused by the pneumococcus.

Now that the cause of the disease has been established it behooves us to use our best endeavors to prevent such infection. According to Randolph, the normal conjunctiva always contains organisms, the commonest species being the *Staphylococcus epidermidis albus* of Welch, a coccus resembling the *Staphylococcus pyogenes albus.* Lawson found the normal conjunctiva to be sterile in twenty per cent. of cases and pyogenic cocci to be rare, and, when present, non-virulent. Other observers have stated that the conjunctiva is generally sterile. It is probable that organisms in the normal conjunctiva are non-virulent, and in order to prevent infection following cataract operation, it would seem advisable to ascertain whether or not the pneumococcus is present. If so, the operation could be deferred for a time and measures taken to get rid of so malignant an organism. The saving of one eye from infection would be worth the trouble entailed in the taking of cultures and of animal inoculations.

Hirota's observations have shown that a mucocele increases greatly the danger of pneumococcus infection. It would be a simple matter to investigate this disease for the same organism. It is our duty as oculists to take every precaution to prevent infections of all kinds and especially the pneumococcus infection which has undoubtedly caused the loss of not a few eyes. I firmly believe that by bacteriological examination, we can at least decrease the number of cases of panophthalmitis following cataract extraction.

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Mortality for July.—The deaths for July were 1,958, 213 more than were reported in June, and 432 less than July, 1903. The death rate for the month was 11.95 per 1,000. The deaths under one year were 122 less, and those between one and five years 106 less than in July, 1903. The Health Department attributes the low mortality to propitious weather and a remarkably good water supply. Acute intestinal diseases heads the list of death causes, with 333; consumption comes next with 233, and then follow violence, with 184, Bright's disease with 144, heart diseases with 143 and pneumonia with 123.

AUTO-INTOXICATION OF GASTRO-INTESTINAL ORIGIN [1]

BY CLIFTON MAYFIELD, M.D.,
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That the character of gastro-intestinal digestion bears mightily upon the intensity and progress of most diseases, is, I think, a statement that will go unchallenged, and that this is the prevailing opinion is proven by the exactness of diet invariably outlined in sickness.

The question then is, Why? and to me the answer seems to be that, either because of a diminished digestive activity, or because of already existing gastro-intestinal disease, the fermentative changes so prone to take place in the digestive tract, become exaggerated.

These changes, the result of chemical processes and bacterial activity, cause the disengagement of gases, especially sulphureted hydrogen, and of potassium and ammonia and also of certain organic toxins and ptomains (allied to the vegetable alkaloids) that are reabsorbed into the circulating media and prove poisonous to the animal cells to a greater or less extent, dependent upon the amount absorbed on the one hand, and on the other upon the rapidity of excretion or of their destruction by the liver.

In acute febrile and eruptive diseases; in most chronic affections, notably renal and cardiac; in neurasthenia and other and better defined conditions of the nervous system; in insanity, and, indeed, in most pathogenic states, the condition of gastro-intestinal digestion with its possibly resulting greater or lesser degree of auto-intoxication, has a bearing upon prognosis and treatment that must not be ignored.

This condition of auto-intoxication is, I believe, as much of a reality, vastly more important and many times more frequently demanding our attention, than the poisoning that supervenes upon the taking into the body of decomposing food products. There is this great difference, however. In the case of the poisons generated within the digestive tract their production is comparatively slow, and when their elimination is normally affected their removal is as rapid as their production, and the system does not become overwhelmed.

Paul Paquin says, relative to the various products of food decomposition and excrementitial matter, "Individually, collectively or associated, they are more or less grave factors in modifying our happiness and safety. In classified diseases such as typhoid or scarlet fever, etc., or any malady reducing nervous control and special functions of the cells of the digestive apparatus; indeed, in any condition lowering the general defensive power of the organism as a whole, the microbes of the digestive tract may become most damaging enemies."

In an article upon "Relapse in Typhoid Fever," read before this society and published in the *Virginia Medical Semi-Monthly*, April 11, 1902, I

[1] Read at a meeting of the Medical and Surgical Society, District of Columbia, May 5, 1904.

called attention to the fact that under the stimulus of the toxin of typhoid fever the normal intestinal inhabitants may become virulent. May it not as well be the case—and to me it seems more than plausible—that under the stimulus of other toxins, as in acute infectious diseases and influenza, the increased activity of normal intestinal germs accounts for many of the indications of auto-intoxication? Certainly the evidences of the presence of gastro-intestinal catarrh would give support to such a theory.

Gastro-intestinal auto-intoxication may result from the ingestion of decomposing food; from the fermentation or decomposition of food within the alimentary tract; or from reabsorption of bile or fecal matter.

The condition arising from the ingestion of putrefactive material may be properly classed under the head of true poisoning, not auto-intoxication, but the remote results arising therefrom would constitute a true auto-intoxication, and to this I will later call your attention.

In faulty digestion there are produced acid and nitrogenous compounds that have been shown to be poisonous. So long ago as 1790 Hufeland, in his work, recognized the condition of auto-intoxication from fermentation and putrefactive changes of food in gastro-intestinal disease. But probably to Bouchard more than to any other investigator must be given the palm for painstaking observation and research into this most interesting subject, and in particular as to the significance of the presence in both the digestive tract and the excretion of the kidneys of certain compounds, the products of bacterial energy.

To him is due the credit of showing the relation of indol in the intestines to indican in the urine, and that this relation is, to a certain extent, constant.

While indol, phenol, skatol and other products cannot be found in the fetus, pointing to the fact that they are the result of germs entering the digestive tract after birth, yet their presence afterward is so constant as to entitle them to be considered normal products of normal bacterial action. Their presence becomes abnormal when shown to be in excess, either by reason of overproduction, or because of incomplete destruction or elimination.

Indol, the product found in largest quantity, is thought to be the result of the activity of the colon bacillus, and shows disturbing effects upon the heart and produces degenerative changes of the liver. Phenol and skatol are found in much smaller quantities, and the source of their production has not, so far as I have been able to find, been determined. Cholin produced from food rich in lecithin is but slightly toxic and occurs particularly when the lower end of the small intestine is occluded. Neurin produced by further action upon cholin is intensely poisonous, increasing intestinal movements and having a paralyzing effect upon the heart.

Pasteur, some years ago, showed the existence in the mouth, stomach and intestines, of bacteria that produce fermentation and putrefaction and elaborate ptomains and toxins, which, absorbed, cause according to dose and rapidity of absorption, acute or chronic poisoning.

These poisons are usually eliminated chiefly by the kidneys except when that emunctory is unequal to the task, either because of the diseased condition of the organ, or because the poisons are formed with a rapidity too great to permit them to act efficiently.

By numerous experiments, that the scope of this paper will not permit me to present, it has been shown that the liver has a very important office to perform in the destruction of these poisons, taken up by the portal circulation, and that the indol in the hepatic vein is much less than in the portal vein. When, under such conditions, the liver is overworked, there ensues a condition of engorgement—so-called biliousness—and, continued into a chronic state, we may have cirrhosis.

The amount of indican in the urine bears to the indol of the intestines an approximately fixed relation, but is not as true a measure of albuminous decomposition in the intestines as the latter, for indican shows only the amount of indol absorbed in the intestines which reaches and is excreted by the kidneys, and is, therefore, the true measure of indol less the amount destroyed by the liver or carried from the bowels in the alvine discharges. The amount of acid in the stomach has ordinarily but little bearing upon the production of indol, as most of the bacterial action by which this body is elaborated takes place below the ileocecal valve and the acid secretions are neutralized before reaching this point, except in marked cases of acid fermentation.

Potash and ammonia salts, as well as ptomains and toxins, are poisonous to the animal cells. Meat fiber contains these salts developed in the process of tissue metabolism, and it was an observation of this fact that caused Liebig to characterize beef tea as not only lacking in nutritive value, but as being actually poisonous.

It is a matter of common observation that constipation gives rise to many of the evidences of auto-intoxication, and yet the theory of self-poisoning is to a certain extent doubted by some because, they reason, the drier the fecal mass the slighter the opportunity for reabsorption and poisoning. As a matter of fact, constipation exists largely because of diminished peristalsis and the slower passage of the fecal mass to its resting place pending evacuation, is attended by increased absorption of its fluids and with these fluids there enter into the circulation coloring matter of bile, potash and ammonia salts and ptomains and toxins in force. At the same time it is true that the condition most favorable for auto-intoxication is the semi-diarrheal state attended by one or two loose movements a day, for here the amount of fluid is large and the chances for absorption proportionately increased.

The effect upon the system of these abnormal products is dependent in large part upon the degree of perfection of the process of elimination,

particularly by the kidneys; and before proceeding further I wish to call attention to the important bearing of auto-intoxication of gastro-intestinal origin to renal disease.

There is no more indispensable organ of excretion than the kidney; no source of auto-intoxication more prolific than the gastro-enteric tract. Therefore, if the first is damaged it becomes of the gravest importance that the digestive tract, absolutely necessary for body nutrition, may not be transformed into a factory and supply depot for materials to poison the body, with no compensating emunctory to eliminate the poisons thus produced.

In violent diarrheal conditions, as in cholera morbus and cholera infantum, the rapid withdrawal of fluids from the body may result in suppressed kidney function and a coincident auto-intoxication, not on account of the great excess of toxins absorbed, but of their accumulation in the system by reason of failure of elimination.

As already stated, the liver acts as a barrier to the entrance into the system of ptomains and toxins, and when, by reason of failure of the liver to do its normal work, or by reason of the demand being beyond the normal liver capacity to work, ptomains and toxins enter the system and auto-intoxication ensues in inverse proportion to the effectiveness of kidney elimination, with resulting headache, irritability, fatigue, muscular soreness, hypochondriasis, vertigo, neurasthenia, lethargy, stupor, insanity, cutaneous affections such as pruritus, acne and urticaria, asthmatic attacks, and functional disturbances of the heart.

Bouchard states that the ingestion of the extract of 2.5 gm. of decomposing meat is sufficient to kill a man.

When decomposing meat is taken into the stomach the symptoms are violently acute if the ptomains exist in sufficient quantity. Such would be a case of true poisoning, the system being overwhelmed as in the case of large doses of the vegetable alkaloids, and the termination should be equally acute; but as a matter of fact, when so-called ptomain poisoning occurs it is rather the active bacteria than the ptomains taken that cause the disturbance; here some hours must elapse before marked evidences of poisoning appear, and this constitutes a true auto-intoxication. The process of decomposition begun and but slightly advanced in the food is prolonged and intensified in the digestive tract, absorption goes on with a rapidity too great for elimination, and we have the symptoms of acute auto-intoxication. It is more than probable, too, that bacteria already existing in the stomach and intestines are, in this bath of toxins, stimulated into increased activity and form no inconsiderable portion of the enemy making the assault.

In a variety of chronic affections of the stomach and intestines there appear evidences of poisoning by toxins and the absorption of the products of acid fermentation and the gases and salts of intestinal decomposition. In cancer of the stomach and intestines; in chronic dyspepsias gastric and intestinal; in chronic diarrhea; and in dilatation of the stomach are found the before-mentioned indications of auto-intoxication.

Personal idiosyncrasy to certain foods is, I believe, rightly considered a condition calculated to bring about a true toxemia after the ingestion of such foods. Probably every one here has seen cases of this kind. The indulgence of certain individuals in strawberries, fish, crabs and numerous other foods that are recognized as foods that "disagree with them," is invariably followed by such symptoms as nausea, vomiting, headache, fever, eruptions in the shape of hives, etc. It would seem that the use of such foods, as also of those repellent to the stomach, whether such distaste is the result of disease or personal dislike, is attended by rebellion of the stomach nerve supply against them,—exactly as the special senses rebel against things disagreeable to them,—digestion in inhibited fermentation or decomposition ensues and we have a typical, though not severe, auto-intoxication; not severe because the liver, bowels and kidneys are equal to the task of protecting the organism against the sudden assault. Where these organs are diseased and defective we may have more severe and even fatal results, and such, I believe, is the true condition in many cases of sudden death in aged, and even young persons, with weakened hearts.

It has also appeared to me that the more chronic condition of auto-intoxication may contribute largely to the characteristic deaths of many of the aged. Such cases usually begin with disturbed heart action without preexisting heart lesion, unless we consider arteriosclerosis, which normally exists in old age; then follows some degree of asthmatic breathing and increasing weakness; the urine is loaded, showing evidences of faulty metabolism; sleeplessness passes into somnolence; the tongue is coated and the breath offensive; the bowels are in a fluctuating condition of constipation and diarrhea; and the temper is more and more irritable. With ever-increasing disinclination for food and more and more evidence of failure of the digestive function, death finally ensues in a few months. Yet, study the case as you will, you can find no one or more organs affected to a degree necessary to account for the end.

To-day the surgeon, as a matter of routine, prepares his patients for operation by the preliminary administration of a cathartic, the evident purpose being to clear the intestines of waste material, and in this he does wisely, for the intestines are thus, in large part, relieved of bacteria and toxins, and the possible complication of toxemia from this source is reduced to a minimum.

My attention has been called a number of times to a class of cases dying after operation for appendicitis in which there appeared no local nor well-defined general condition to account for such a termination. One such patient of my own I had an opportunity to observe and the symptoms were those of profoundly disturbed digestion and heart terminating shortly before death in coma.

The local condition was apparently all that could be desired, and the case, to me, seemed to be one of gastro-intestinal auto-intoxication.

Increase in the frequency of epileptic seizures, attending excessive feeding and resulting imperfect digestion, is such a common occurrence as to call for mere mention.

It has been claimed that during chronic toxemia there is a progressive lessening of the bactericidal power of the blood serum; and if such is true we can readily understand to what an extent such a condition would add to the gravity of various diseases.

Dr. Otto Kauffman says that certain nervous disturbances and organic nervous diseases can be explained by gastro-intestinal auto-intoxication.

Dr. Hubert Work says that loss of weight and anorexia occur so constantly in connection with certain pschycoses as to suggest a common cause. Further that it is certain that insanities do result from prolonged digestive disturbance and that auto-intoxication from the alimentary canal may alone cause many cases.

Dr. Forbes Robertson considers toxic action the most frequent primary etiological factor in the production of insanity, and in this connection insists upon the paramount importance of the gastro-intestinal tract. He believes that toxemias from this source are important factors in the production of various acute and chronic diseases; cases of dementia; locomotor ataxia; general paralysis; senile insanity; chronic alcoholic insanity; idiopathic epilepsy; most cases of acute and chronic mania and melancholia; and chronic Bright's disease. He believes that the majority of cases of insanity are not primarily diseases of the brain, but the result of toxins from other sources which affect the brain cells, disorder their metabolism, and more or less permanently damage, or even destroy many of them.

There is one quite fashionable disease to which I would invite special attention. Neurasthenia, like malaria, is ofttimes a cloak to cover a multitude of sins, whether of lack of observation, or of catering to the whimsicalities of patients who dislike to be told, even in polite terms, that they are paying the penalty for past gluttony, but much prefer, indeed, are pleased, to be told that they are neurasthenic. Understand, I do not deny the existence of a true neurasthenia, or, as I interpret it, fag of brain and nervous system from business worry or too great mental effort, but I do believe that the majority of such cases are nothing more or less than faulty digestion with resulting ptomains and toxins in excess. The symptoms most prominent are such as may be found in a less degree in chronic dyspeptics and the greatest, and, indeed, almost the only benefit to be derived is from means calculated to abate the gastro-intestinal disease and its resulting auto-intoxication.

There has ever prevailed with the medical profession a dread of the use of laxatives in typhoid fever; yet, believing in the effect upon the typhoid infection of a coexisting gastro-intestinal auto-intoxication, the result of bacterial activity and of constipation when the latter exists, I have frequently found excellent results to follow the cautious administration of calomel.

I propose to say but little on the extensive subject of treatment, and that only in general terms, for the time at my command will not permit a detailed consideration of this part, and very important part, of auto-intoxication.

The conditions to be met are: (1) Avoidance of the introduction of foods most liable to fermentation and putrefactive changes, and of substances already undergoing such changes; (2) the lessening or destruction of bacterial energy within the gastro-enteric tract; and (3) relief of the system from toxins, ptomains and products of acid fermentation, either by rapid removal before absorption, or by aiding their excretion by the usual organs of elimniation.

The avoidance of foods in a condition of fermentation or decomposition however slight is, of course, imperative.

A much harder question to determine is the correct diet adapted to the varying conditions of disease of the digestive organs, a question that can only be settled after a proper consideration of each case under treatment. It is safe to say, however, that in all cases foods rich in starch and sugar are to be avoided, because of the ease with which they undergo fermentative changes; and also such foods as are hard to digest, which latter give the greatest opportunity for bacterial development and the production of toxins.

It is likewise necessary to avoid too frequent and excessive feeding, for foods easiest of digestion given in too large quantities, overtax the digestive function, perhaps inhibit it entirely, and thereby afford opportunity for fermentation and decomposition.

The effect of drugs administered by mouth or rectum upon bacterial energy or life is, to say the least, rather uncertain. Various remedies, for example iodine, creosote, carbolic acid, naphthol, iodoform and charcoal, as well as many others, have been recommended. I believe I have run the gamut, only to fall back upon creosote and charcoal, the former in moderate, the latter in large doses, as seeming to be of most service.

Stomach and colon washing I have found quite valuable in removing the offending agents. By means of the stomach tube remains of undigested food, the product of fermentation, gases and bacteria are removed and the organ left in far better condition for the next food ingested. No one who has ever used the stomach tube with any frequency has failed to observe repeatedly how certain symptoms in catarrhal and those dilated conditions of the stomach that so much distress the patient, disappear and how bowel conditions are benefited also.

Colon washing is likewise valuable, though for obvious reasons it cannot be carried out so thoroughly as stomach washing. Inasmuch as bacterial activity is greatest below the ileocecal valve, and because the washing will often remove fecal

accumulations not touched by laxatives, we would naturally expect, and usually find, that colon washing when thoroughly done proves of marked benefit.

Unfortunately these two methods of washing reach but a part of the digestive tract. Toxins in the small intestines will be absorbed, at least, in part, and upon the rapidity and effectiveness of their destruction and elimination by liver and kidneys depends to a certain extent the degree of auto-intoxication. The small intestines are swept and liver engorgement relieved by occasional mild laxatives, thereby at the same time lessening the amount of poison to be absorbed and increasing the functional activity of the liver.

The effectiveness of the kidneys is increased by moderate indulgence in water—but very sparingly during meals; complete prohibition of alcoholic liquors; and careful regulation of diet. The skin must also be kept in good condition by baths and proper clothing.

The great difficulty in the way of preventing and overcoming the condition of auto-intoxication lies in the lukewarm assistance or direct antagonism of the patient, and to such should always be made clear the fact that the fight will be one of long duration and will call for the greatest patience and most persevering attention to details.

BACTERIURIA, WITH SPECIAL REFERENCE TO COLI BACILLURIA.[1][2]

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The constitution of human urine renders it an almost perfect medium for the growth and multiplication of lower forms of organic life. As a consequence, we find that to an unusual degree the urinary tract is subject to attack from bacterial forms of life, the resulting suppurative and infective processes possessing, with hardly an exception, the characteristic of excessive obstinacy. It is not the purpose of this paper to consider the bacteriology of the urine, but to discuss the comparatively little known condition termed "bacteriuria," the term being employed in the sense originally used by Roberts (*British Medical Journal,* 1881, Vol. 2, p. 359), to designate certain cases in which the urine is the seat of infection by microorganisms without the urinary mucosa sharing in the process.

Recent discoveries have added much to our knowledge of the excretion of disease germs by the kidneys in the various systemic infections. It has long been known that toxins were excreted by the kidneys in most, if not all, diseases of infective nature, but until recently considerable difference of opinion prevailed as to the elimination of specific disease bacteria themselves, unless gross lesions of the kidneys existed; in other words, unless the filter was leaky. This point is now fully established. A breach of continuity of the renal structure need not exist. The most important of the infective agents eliminated by the kidneys in disease are the typhoid bacillus, *Bacillus coli communc,* pneumococcus, and the tubercle bacillus.

The typhoid bacillus is present in at least one-fourth of all cases of typhoid fever, often in enormous numbers, in some cases the urine being a pure culture of the germ. The virulence of the bacillus is retained, being equal in one case observed by Richardson to that of a culture from the stools and internal organs. Pneumococci have been found in the urine in large numbers in pneumonia during the height of the fever (Kleinmann). The tubercle bacillus has been repeatedly demonstrated in the urine without pus being present in cases of miliary tuberculosis. Phillipowicz (*Wiener med. Blätter,* 1885, No. 22) discovered the bacillus of glanders and of anthrax in the urine of animals suffering from those diseases, and was able to cultivate streptococci from the urine in erysipelas and ulcerative endocarditis. Pyogenic cocci have been repeatedly demonstrated in urine free from pus, and Schweiger (*Virchow's Archiv,* Band 100, Heft 2) has proved that the urine of scarlatina and varicella may carry contagion.

While this elimination in the urine of specific germs in infective systemic conditions undoubtedly constitutes bacteriuria in the broad significance of the word, it is not within the meaning of the term as ordinarily used in clinical medicine.

The term bacteriuria, as originally employed by Roberts and Ultzmann, and as understood in clinical medicine, is meant to imply an infection of the urine by bacteria from some source within or tributary to the urinary tract itself. A distinction is therefore to be made between such cases and those instances just reviewed, in which the urine acts merely as a vehicle for removal of disease germs from the system. For a clear understanding of the condition known as bacteriuria it is equally important to eliminate those frequent infections of the mucous membrane of the urinary organs in which the urine teems with bacteria thrown off from their nidus of growth in the mucosa.

The symptom known as bacteriuria is therefore to be defined as a condition in which bacteria are excreted in large numbers in a pus-free acid urine, without any sign or symptomatic indication of cystitis or infective nephritis. When first voided the urine is cloudy, often lactescent and gives forth a putrid, revolting smell, which has been likened by Moullin to the stench of stale fish. The turbidity of the urine when voided, and the penetrating offensive odor are the characteristic symptoms of the condition. The opacity does not settle to the bottom of the vessel on standing, and cannot be separated by sedimentation in the centrifuge or by filtration through paper, although the urine may be rendered clear by passage through a porcelain filter or by thorough shaking with magnesium usta.

1 Read at the Fifty-fourth Annual Meeting of the Illinois State Medical Society, Bloomington, Ill., May 18, 1904.
2 Received for publication May 24, 1904

The reaction of the urine is acid, and under the microscope the field is seen to be swarming with actively motile organisms. The sediment is small and contains no pus, or but a few rare pus leucocytes are to be discovered. Local urinary and general systemic symptoms are generally absent. In most of the cases observed this has been the rule, although a minority have shown vesical irritability, urinary incontinence (especially in children), and occasionally digestive and nervous symptoms have been present. The bacteria are mainly the *Bacillus coli commune*, often in pure culture. Jeanbeau (*Gazette des Hôpit.*, June 24, 1899) collected 67 cases from the literature, in 56 of which the *Bacillus coli commune* was the infective agent. In the remaining 11 it was streptococcus, *Proteus hauseri*, or *Bacillus subtilis* alone or in combination. Barlow (*Deut. Archiv für klin. Med.*, Bd. 59, p. 347) gathered together from the literature and his own experience notes of 65 cases of bacteriuria. In these, *Bacillus coli commune* was present 19 times—17 in pure culture, twice with staphylococci. Of the remainder, sarcinæ were present in 22 cases, staphylococci in three cases; in the remaining two, undetermined bacteria.

In five cases occurring within the writer's experience within the past two years, the *Bacillus coli commune* was the predominating bacteria, associated in three of the cases with common pus organisms.

Concurrence of clinical experience is in favor of the *Bacillus coli commune* being present in the great majority of cases, frequently in pure culture, sometimes associated with pyogenic microorganisms. The importance of the coli bacillus in the urine may be easily overestimated, because of the great frequency of its occurrence as a secondary infective element in suppurative diseases of the bladder and kidneys. In infective urinary diseases different forms of pus organisms may be abundantly present at first, and subsequently become entirely replaced by coli bacilli, which, because of their rapid growth, hide the original pathogenic microbe. This is undoubtedly the origin of many cases of coli bacilluria.

In the majority of cases of *Bacillus coli* infection of the urine there seems no difficulty in understanding how the organism gains access to the bladder. The path of infection is apparently the urethra, since urethritis, instrumentation or injection have usually preceded the bacteriuria. The writer is inclined to reject the idea of a direct infection by way of the urethra, normal or diseased. Undoubtedly the frequently preceding urethritis stands in a certain casual relationship to the coli infection; not, however, in the writer's opinion, so much by direct infection of the urine *per urethram*, as indirectly, by preparing the soil through gonococcal involvement of the prostate and seminal vesicles, the subsequent coli bacillus invasion occurring from the bowel through the lymphatics into the inflamed prostate or vesicles. Coli bacteriuria is a comparatively frequent complication of gonorrhea, especially of cases in which the deep urethra and prostate have become involved. Fuller (Diseases of the Male Sexual Organs, Lea Brothers & Co., Phila., 1895) particularly has called attention to the frequent existence of *Bacillus coli commune* in the seminal vesicles in chronic gonorrhea. The above view of the invasion of the urinary tract receives support from the fact that operations upon the rectum, fissures, fistulæ and hemorrhoids, all of which involve a breach of integrity of the rectal mucosa, and prostatic congestion from irritation, predispose to coli bacteriuria, and in practical experience have been known to give rise to it without urethral aid. Additional testimony is afforded by the frequency of coli infection of the urine in prostatic hypertrophy during the later years of life. Moreover, the almost complete monopoly of this disease by the male sex incriminates the prostate and seminal vesicles.

That the bacteria in cases of bacteriuria find their way into the bladder by way of the urethra is negatived by certain well-known facts. The *Bacillus coli* is one of the common inhabitants of the glands and foreskin, and of the vulva (in 50 per cent. of women, according to Melchior), and Winslow (*Journal Med. Research*, Boston, Dec., 1903) has demonstrated its existence on the hands of between five and ten per cent. of persons examined indiscriminately. Despite this ubiquitous prevalence of the germ, it has on investigation seldom been found in the normal urethra, or in that channel when diseased. It cannot, therefore, be counted as one of the common bacteria of the urethra. Moreover, statistics show that the *Bacillus coli* is the infecting agent in most of the cases of bacteriuria, whereas staphylococci are comparatively seldom present. We would expect the reverse to be the case, if the infection of the urine were from the urethra, since the staphylococcus is a common, and the *Bacillus coli* a rare, resident of that channel.

Barlow inclines to the belief that the infection often takes place from the bowel by means of lesions of the rectum, citing as causes such factors as fissures or lacerations of the anus, fistula in ano, and even severe massage of the prostate and seminal vesicles through the rectum.

Posner is in favor of the intestine in preference to the blood as the source of infection. In fact, it is only in certain rare cases, where local causes seem entirely lacking, that it becomes necessary to adopt the explanation of Rovsing, that the germs find their way into the bladder through the medium of the circulation.

Even more necessary to explain than the source of the infection is its seat. The bacteria certainly do not live only in the bladder, or the difficulty of removing the condition would be much less than experience proves it to be.

It is difficult to account for the retention of these organisms in the bladder in immense numbers for months and years without exciting inflammation. This may be explained by the fact that the *Bacillus coli* is not, under ordinary cir-

cumstances, a urea-decomposing bacteria, and consequently, as believed by Rovsing, it is innocuous to the bladder as long as free drainage is maintained. This germ, however, it is well known, differs greatly in virulence according to the source whence it comes, and it may be that there is some factor in its environment in the bladder which renders it to a large extent harmless to the tissues. The element which suffices to protect the bladder against infection is no doubt the periodic and complete emptying of its contents by micturition, so that the vesical epithelium is not subjected to prolonged contact with the bacteria. In cases where free drainage is interfered with, as, for instance in prostatic hypertrophy, cystitis speedily results.

In many instances bacteriuria gives rise to no local or constitutional symptoms. As a rule, however, it is accompanied by a peculiar urethral discharge, which may be more or less constant, or only present after efforts at defecation. This discharge may be continuous with gonorrheal flux, which has persisted for an undue period and gradually lost its specific character. Quite as frequently a decided and even considerable interval may elapse between cessation of the urethritis discharge and the appearance of that due to the bacteriuria. An important point is that this pseudo-gonorrhea resists all the usual means of urethral treatment.

In three instances of bacteriuria under the writer's observation, slight nocturnal and diurnal incontinence existed. If the infection is localized in the prostatic apparatus, the urine may present only intermittent cloudiness. Under such circumstances the first portion of the urine will be more or less clear, the second half being lactescent, or it may be only at the end of micturition, when there is energetic contraction of the periprostatic muscular fibers, that the urine shows the characteristic turbidity. In the experience of the writer, the bacterial cloud in the urine may be greatly intensified by "stripping" the prostate and vesicles by means of the finger introduced into the rectum.

Irregular constitutional symptoms may develop during the course of a bacteriuria. Digestive and nervous disturbances, lassitude and intermittent pyrexia are frequent. The occurrence of fever in these cases may be explained on the hypothesis of Boyer and Guinard, that so long as the epithelium continues in a healthy state the toxins produced by the bacteria while in the bladder are not absorbed, but if the toxins from any cause such as deficient drainage become concentrated, the epithelial cells being kept in contact with noxious substances lose their vitality, and absorption takes place, with resulting systemic reaction. Under such circumstances acute symptoms may arise which may even closely simulate typhoid fever, giving, however, no Widal reaction, but showing many coli bacilli in the urine.

The diagnosis of bacteriuria rests upon the presence in the freshly voided urine of an opalescent cloud which cannot be removed by acidulation, filtration or sedimentation. The disgusting fetid odor of the urine is characteristic, and under the microscope large numbers of actively motile bacteria are to be seen. In cases in which the prostate or seminals are the seat of the infection, they are found to be tender to palpation, and yield upon pressure a milky fluid which drips from the meatus, and which, if caught upon a glass slide and stained, is found to be a rich bacterial culture, principally of *Bacillus coli commune*.

The prognosis of bacteriuria depends on the nature, seat and severity of the infection. The condition is always obstinate to treatment—seldom is recovery rapid and complete. In proportion to the extent which the prostate and seminal vesicles are infected is the prospect of recovery prejudiced. The cases in which no infection of these organs can be made out are distinctly more favorable. A strong tendency to relapse exists, and must be carefully considered in framing a prognosis.

An important part of the treatment of bacteriuria consists in the improvement of the patient's general condition by hygienic measures, a full generous diet, careful regulation of the emunctories, and the administration of iron and other tonics as they seem indicated. Urotropin (hexamethylene-tetramin) should be given and continued perseveringly in a routine manner, from twenty to forty grains daily being administered, in divided doses.

Local treatment consists in the correction of any local complication which may exist. Urethral stricture, hemorrhoids, rectal fistula and fissure should be searched for and treated when found. Free drainage from the bladder is most important, and if from any cause, such as prostatic hypertrophy, the bladder is imperfectly emptied by natural means, the catheter must be employed as frequently as may be required to relieve symptoms due to retained urine.

The prostate and seminal vesicles should be carefully examined as to size, tenderness and consistency, and the character of the "strippings" from these organs is to be carefully investigated bacteriologically. If the prostatic apparatus is found to be the seat of infection, the greatest benefit will result from local treatment of these organs. Gentle massage of the prostate and stripping of the vesicles by means of the forefinger introduced into the rectum, should be systematically carried out once every four or five days. The greatest gentleness must be employed in performing these manipulations in order to avoid setting up local reaction through traumatism. A clean sigmoid and colon is to be provided for by means of periodic high enemata taken in the knee-chest position.

Local stimulation of the deep urethra by means of silver solutions appears to be of little avail. If the bladder is irritable, or pus leucocytes exist in the urine sediment, lavage of the bladder, with mild antiseptic solutions, is indicated.

THE USES OF X-RAY IN MEDICINE AND SURGERY.[1]

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THE X-ray has two very important places in medicine and surgery, first as a diagnostic agent, and secondly as a therapeutic agent. At present I believe it is generally accepted that the therapeutic uses of the X-ray even exceed those of the diagnostic.

In this paper I will not mention technic any further than to say that it is just as essential that the X-ray operator should have mastered the minor details and be as accurate as a surgeon operating, or a physician prescribing the most powerful drugs.

I have been interested in the X-ray almost ever since its discovery, and during this time have visited many of the American and European hospitals. When I saw that a physician's work excelled along some lines, I inquired carefully into his technic and found his results due to accuracy and other details.

When the X-ray was discovered many physicians placed a machine in their offices and thought all they had to do was to turn on the switch and make a diagnosis without even being familiar with the apparatus, but it was not long before they found out their mistake and most of them discarded the X-ray as a diagnostic agent. But now, with the improved apparatus and better technic, you all know what can be accomplished.

The same is true of radiotheraphy. When a few cases of carcinoma and lupus were reported cured it was natural for many to place machines in their offices for therapeutic purposes, and a large proportion of these have never made it a study and perhaps have only used the rays in a certain line of cases. Then the physician when he would see it recommended by someone for a different disease would treat the first two or three cases that came without first making a study of the technic used by the operator.

As a rule, the physician reporting cases does not give much of his technic, and then when results are not obtained, the X-ray is blamed and not the operator's methods. When we are not able to produce the same results that are reported by another, we should consider first the degree to which the tissues are involved, and our technic, and the way I have been doing it is to visit the physician and learn more about his methods, instead of condemning the treatment.

It is natural that there is a greater difference in the methods of treatment used by the various radiotherapeutists than any other class of physicians, due to the short time radiotherapy has been employed. A surgeon does not condemn intestinal anastomosis because he is unable to perform the operation. A knowledge of the X-ray cannot be obtained in a week or two. I do not believe there is another specialty which requires more careful and hard study than radiotherapy.

The X-ray tube can give a light that will only travel several inches from the tube, or it can give a light that will fluoresce on a screen and show the bones of the hand 175 feet from the apparatus. These rays seem to have a different place therapeutically, the rays from the low tube are very active and have a more destructive action on the tissue, while those given off the higher tube are more stimulating. Every high tube gives off both kinds of rays, and might be compared to a shotgun prescription, as ordinarily used.

Freund states that "it is very likely, just as white light is composed of several colors, Roentgen rays may be composed of various kinds, which may differ from each other in penetrative power as in their physical and physiological effects." The quality as well as the quantity is likely accountable for the results of different operators.

In speaking of the cases which come under X-ray therapy I will classify them under four heads:

1. Those cases which respond readily and as a rule do not need surgical interference; viz., lupus, epithelioma of the face, acne, eczema and tuberculous glands.

2. Those which should be treated for a short time, the mass removed and then continue X-ray treatment to prevent recurrence, viz., carcinoma.

3. Those cases of carcinoma which are considered inoperable should be treated to prolong the patient's life and make him more comfortable.

4. Tuberculosis. Many of these cases in the initial stage respond to X-ray treatment. But here the X-ray should only be considered a useful adjunct.

The treatment of certain skin diseases, namely, lupus, acne, chronic eczema, etc., has reached a stage where it is recognized by many of the leading authorities, as the most effective treatment. However, in the treatment of many skin diseases, it is better to use Finsen light or high electricity in connection with the X-ray.

In this connection I will report a case of acne. Miss B., aged twenty-five years, had acne for ten years, and during this time had been under treatment almost continually. The X-ray treatment was given until some dermatitis was produced and then high-frequency electricity from an Oudin resonator, using a high vacuum electrode, was given. The treatment lasted three months, when the acne had entirely disappeared. I have treated several cases over a year ago, and so far there has been no recurrence of acne, where the treatment was continued for sufficient length of time.

It has been continually said that mammary carcinoma should have postoperative treatment with the X-ray in order to prevent recurrence. This is certainly true, but I believe in certain cases it is more important to treat the case a short time previous to the operation and more particularly so if there is considerable glandular involvement. The disease in the axillary glands can usually be cured in four to six weeks, then the

[1] Read before the Indiana County Medical Society.

mass removed by the surgeon and it will not be necessary to remove the glands.

I have thus treated four cases with excellent results. Also, I have been inquiring from other physicians who are using the X-ray, and many of them say this would coincide with their experience. Now, I do not advocate the surgeon leaving diseased tissue, even if it is necessary to remove all the glands after the X-ray treatment given previously to the removal of the breast.

The other day I had a case referred for an opinion, as I have had many times in the past, to ascertain whether it was an X-ray case or whether it should be treated surgically and then receive X-ray treatment. This case, like many others when they came to the surgeon, had axillary involvement, and one of the glands was as large as a hickory nut. Now, it is reasonable when the glands in the axilla are of this size and the cervical glands are slightly affected, that there is likely to be some involvement of the mediastinal glands, and if the breast, muscles and all the glands are removed, as most surgeons will say at once, will there not likely be a recurrence within six months?

In the last three years I have had referred to me over 20 cases of recurrent carcinoma of the breast. The external signs of the disease in many cases disappeared within from six to twelve weeks, and still in many of these cases the process only retarded, that is, they are cured as far as the external signs of the disease are concerned, but there is often sufficient involvement of the mediastinal and bronchial glands to kill the patient in course of time before coming for treatment. However, the process may be retarded for months. To prove that the X-ray had nothing to do with the involvement of the mediastinal and bronchial glands, I have taken radiographs of the patient's chest at the beginning, and showed these glands to be involved.

I understand that many dermatologists who are not having their cases of epithelioma treated with the X-ray in order to prevent recurrence, use an arsenical paste after the operation to go further into the tissues and destroy the particles which they say are nearly always left. So it seems after careful consideration that every patient should have the benefit of the X-ray when carcinoma is to be treated.

The combination of operation and X-ray gives the patient all the benefits derived from the two best methods. There is no need for delay after the operation in giving a few treatments, but while these treatments should be given in fair doses it is not advisable to continue raying to a point where it will injure the healthy tissues. However, it is a well-known fact that the healthy tissues do not burn as readily as the cancerous. Therefore, it is very important to select the proper dose for each case. It is certainly advisable in treating inoperable cases not to crowd the treatment with the idea of effecting a cure at least in a short time, as by so doing you will break down tissue, and the system will be flooded with toxins with which it will be unable to cope.

This is one of the reasons why some few have opposed the treatment in favorable cases.

In this connection I will report several cases:

Case I.—Mrs. B., aged thirty-eight years, was referred for X-ray treatment on account of the severity of the cancerous condition of the breast. The glands in the axilla were involved extensively, the cancer in the breast had begun to break down, and there was some discharge. The case was treated daily with X-ray for three weeks, when considerable dermatitis was produced. The discharge was checked, the mass in the breast was reduced in size, and the enlarged glands in the axilla had almost entirely disappeared when the patient was operated upon by Doctor Farree, six weeks after the first X-ray treatment. The doctor said he could see that the effects of the X-ray extended deeply into the tissues. Microscopical examinations confirmed the diagnosis. The patient was given a few postoperative treatments and made a good recovery. It is now eighteen months since the operation and there is no sign of recurrence.

Case II.—Mrs. J., aged forty-three years, had a cancerous mass in the breast and some axillary involvement when she started the X-ray treatment by a physician in another city. When she came to my office I advised a removal of the mass and then continue the X-ray treatment. This was done, but after the operation she took only twelve X-ray treatments. It is now a year since the last treatment was given. The patient has had no recurrence, and from the nature of the case a recurrence was expected. I report this case to show the effect of treatment given before operation.

Case III.—Mrs. B., aged fifty years, had extensive involvement of carcinoma in the breast and some little glandular involvement. I had the opportunity of examining this patient before she was operated upon, as her physician wanted the X-ray used afterward. Three weeks after the operation she came for X-ray treatment and at that time her arm was considerably swollen and her shortness of breath and slight cough showed that she had mediastinal involvement. Previous to the operation the arm was not swollen, nor had she any tendency to cough, she had always been entirely healthy. The patient has been treated six weeks with the X-ray and has improved somewhat, the cough has almost disappeared, and the arm is not swollen nearly so much. In this case I do not expect a cure, but only to prolong the patient's life. From what I have seen in my own work, and also in cases which have been related by other men, I believe this patient would have made a recovery, or at least would not have had any swelling of the arm if she had been treated a short time before the operation, as here the physical condition was better than in either of the preceding cases. This is a point to be considered in the treatment of carcinomatous growths.

Case IV.—Mrs. B., aged thirty-five years, had been operated upon for carcinoma of the breast

six months before she had a recurrence. The breast, muscles and glands had been removed. When she came for X-ray treatment there was considerable involvement of the tissues of the chest walls. Treatment was given every day for ten days, afterward three times a week for a period of two months, when all the external signs of the diseases had disappeared. When she came I took a radiograph of the chest, which shows the mediastinal and bronchial glands were involved. The treatment will prolong her life, but it can hardly effect a permanent cure.

Hyde, Montgomery and Ormsby, in the *Journal of the American Association,* in speaking of epithelioma, say: "Of fifty-five cases of carcinoma of the skin treated by us with radiotheraphy, the majority were of the superficial type, known generally as epithelioma or rodent ulcer. The value of the X-ray in the removal of such growths is so generally recognized that we shall give here a summary of our observations, together with a brief outline of a few typical and otherwise interesting cases. In the superficial form of carcinoma our results have been quite uniformly successful."

I believe this report of Drs. Hyde, Montgomery and Ormsby will coincide with the reports of a large number who are employing the X-ray. However, I do not believe it is wise to continue the X-ray treatment of epithelioma for more than six weeks, unless considerable improvement has taken place; then diseased tissue should be removed at once. But, I believe that cases that have not responded to X-ray treatment in most cases have been treated by a tube which was too high in vacuum. I know of such a case which had been treated for some time and no results produced. The patient went to another operator who used an extremely low tube, and six treatments in two weeks produced the desired amount of irritation, and within four weeks the epithelioma had entirely disappeared.

MEDICAL PROGRESS.

MEDICINE.

Etiology of Pneumonia.—The examination of healthy lungs have convinced H. DÜRCK (*Münch. med. Woch.,* June 28, 1904) that a large number of bacteria, including the pneumococcus, are almost constantly present in the alveolar spaces. In certain animals the filtering apparatus of the upper air-pasages is very perfect, but in man even coarser particles reach the lung and give rise to the well-known discoloration. Another factor thus must be active to set up an inflammation, and this the author believes to be sudden exposure to cold. If a pure culture of pneumococci is blown into the lungs of animals nothing will usually happen, but if the animals are first chilled by placing in ice-water, a pneumonia results almost invariably. Autopsy shows a typical lobar consolidation.

Excretion of Iodine with Iodipin.—The greatest disadvantage of administering iodides is the rapid excretion, so that fairly large amounts must be given in frequently repeated doses, with the result that iodism is common. The excretion begins in half to several minutes and ceases in about thirty-six hours after one gram, after about 80 per cent. has passed into the urine with iodipin. H. SINGER (*Zeitsch. f. klin. Med.,* Vol. 52, Nos. 5 and 6) found only about 60 per cent. in the urine and the excretion was continued over four to five days. With rest and abundant food the excretion is slower than if the patient is active and insufficiently fed. As with the iodides the largest amount of iodine is found in the urine directly after injection, but the excretion has a tendency to be more uniform.

Infusions in Pulmonary Tuberculosis.—A very extensive research on this subject has been made and is now published by JACOB, BONGERT and ROSENBERG (*Deut. med. Woch.,* No. 28, 1904). Their study is both experimental and clinical and the technic of their method as applied to the human subject is as follows: The laryngeal surface of the epiglottis and the vocal cords is anesthetized with a 20 per cent. cocaine solution. Shortly after a thin tracheal rubber spray tube is introduced through the glottis and through it the trachea is sprayed with several c.c. of a 2½ per cent. solution of β-eucaine. The coughing which is apt to follow does not usually last very long. A bougie, provided with a very flexible stilet, is then introduced into the trachea. When this is in place the stilet is removed and the bougie may then be carefully pushed down into either bronchus. A syringe containing the tuberculin is attached to the bougie and the fluid slowly injected. The amount was usually about 20 to 30 c.c. of a solution of 0.01 to 0.02 of the tuberculin to 100 of water. As the reaction to the tuberculin disappears, the quantity of tuberculin is increased. After treatment, the patients are put into the horizontal position, as it was found that in this way the fluid found its way into the upper parts of the lung. The authors claim that after a little experience this procedure can be completed in about ten minutes, and is well borne by the patient. The method was applied in five cases, all of which were in poor general condition and in the second stage of the disease. The infusions varied in number—in one 38 were given in the course of four and a half months; in another 18 in two and a half months. The results are reported to have been excellent and the patients were considered to have been clinically cured,—the physical signs having disappeared, symptoms being relieved and an increase in weight noted. The method was apparently harmless, as no unpleasant after-effects were noted. It is also claimed that the procedure will have a diagnostic, in addition to its therapeutic value. It was found that if an individual was afflicted with tuberculosis, the injection of the tuberculin, as described, will be followed by a reaction if only 1-10 or 1-12 of the dose is given which would be necessary in order to obtain a reaction by the subcutaneous method. If the tuberculous process is localized in some other part of the body than the lungs, the reaction after the infusion will only appear after an equal or greater dose has been injected than would be required for subcutaneous injection. A special monograph is about to be published by the authors, which will contain a more detailed description of their researches.

SURGERY.

Congenital Elevation of the Scapula.—An interesting contribution to the etiology of this subject is contributed by H. J. LAMERIS (*Archiv f. klin. Chir.,* Vol. 73, No. 2), who reports in detail a case where examination disclosed a tense band extending from the angle of the scapula to the tip of the fourth spinous process. An operation showed that the band was a portion of the lower segment of the rhomboideus muscle which had undergone connective tissue changes and become con-

tracted. After extirpation of the band, the deformity partially disappeared and the motion of the arm was less interfered with. The author believes that some lesion of the rhomboideus muscle was the cause of the scapular elevation in his case, and he considers the condition analogous to that seen in the sternomastoid in congenital wryneck. Similar observations made by Sainton, Kirmisson and Roger, seem to show that a lesion of this nature in the rhomboideus muscle plays a very important part in the production of scapular elevation. The variety of positions assumed by the scapula in this condition can be explained by assuming that a contraction of either the upper or the lower part of the muscle pulls the bone in one direction or the other. The diminished rotation of the scapula can also be explained by the same reasoning.

Subcutaneous Alimentation.—Artificial methods of giving nourishment subcutaneously is discussed by P. L. Friedrich (*Archiv f. klin. Chir.*, Vol. 73, No. 2). This method has been advanced as of particular value in abdominal surgery and the author has used it with success in several cases of peritonitis, gastric and intestinal perforation. He used the preparation devised by Prof. Siegfried, designated as pepsin-fibrin-pepton, which may be readily sterilized and remains so for several weeks. The maximum dose is about 20 gms. daily. He has employed it from ten to fourteen days and succeeded in tiding these patients over until nutriment could be given by other channels.

Tuberculosis and Osteomyelitis of the Patella.—This condition is exceedingly rare, for among the large number of surgical cases at the clinic in Jena during the past fifteen years, W. Ropke (*Archiv f. klin. Chir.*, Vol. 73, No. 2), reports only eight cases of primary tuberculosis and two cases of osteomyelitis of the patella. Young persons seemed to be the most often affected. The diagnosis of a suppurating or a tuberculous focus in the patella depends on the localization of the focus and the involvement of the joint and the overlying soft parts. As soon as the diagnosis of either condition is made operative interference is imperative on account of the danger to the joint. This may become anchylosed or secondarily affected with tuberculosis. If perforation of an osteomyelitic focus has already taken place into the joint, and a suppurative arthritis resulted, the focus in the patella must be thoroughly cleaned out and the joint punctured and drained. It may thus be possible to obtain more or less mobility in the joint. If the tuberculous process in the patella is combined with a similar one in the knee-joint, and a resection of the latter is done, the question as to what disposition is to be made of the patella depends on the extent of the lesion in this bone. It may be either totally extirpated or retained for the purpose of filling up bony defects in the femur or the tibia, which have resulted from the excision of diseased bone.

Soap Tinctures for Cleansing the Hands.—An interesting article on this all-important subject is presented by R. Falck (*Archiv f. Chir.*, Vol. 73, No. 2). His experiments have been made with the spores of molds. These spores may be divided into two types which behave differently toward antiseptics. The one variety is coated with a film of air which defies all watery solutions, but is readily susceptible to strong alcohol, and the underlying spore is quickly killed. The other variety has a mucous or gelatin coating, which resists alcohol in the dry state, but is readily affected by watery germicidal solutions. The writer believes that a similar condition applies to bacteria and that a combination of the alcohol and watery germicidal solution is necessary to produce complete disinfection of the skin. The latter process must be based on a combination of mechanical cleansing with chemical disinfection. The first part should consist of the application of an alcoholic solution of soap, as this will penetrate deeper into the skin than the watery solution. The alcohol, however, must not be too concentrated, otherwise a contraction and hardening of the epidermis results, which renders it impervious to the action of the soap. An alcoholic soap solution, moreover, removes the air and emulsifies the fats, in this manner bringing the germs in the skin into the field. In addition those spores are moistened, which resist to a greater or less degree the action of water, and are then destroyed. The remaining spores are also rendered more susceptible to the action of the succeeding watery solutions. These indications have been met by the author in a soap which on the addition of water forms a "tincture" of the following composition: Soda soap, 15 per cent.; water, 15 per cent.; alcohol, 70 per cent. The process of washing the skin is divided into three parts: (1) The soap is softened with a little water and rubbed thoroughly into the skin; (2) this is rubbed up into a foam with water; (3) after rinsing, disinfection with lysol or corrosive sublimate. The author has had good results with this method, especially in getting rid of the spores of molds.

Newer Methods of Opening and Closing the Abdomen.—There is no more remarkable fact in surgery of the present day than the want of unanimity existing as to the best method of opening and closing the abdomen in abdominal operations for pelvic diseases, remarks E. Hastings Tweedy (*Brit. Jour. of Obst.*, June, 1904). The vertical incision is still the operation of choice among British surgeons, but upon the continent the transverse incision has largely superseded it. In the transverse incision, a slight curve is made with the convexity toward the pubis and through the skin, adipose tissue and sheaths of the recti. The structures are raised as a thick flap above and below the incision, from the muscles lying below them. The divisions between the recti can now be clearly made out; the latter are separated and the abdomen opened in the usual manner. The advantages of such an incision are manifest. In the first place, it runs in the direction of the elastic fibers of the skin; as a rule the parts fall naturally into position on the completion of the operation, and the fear of hernia is reduced to a minimum, the severed aponeurosis is, throughout the greater part of its course, protected by the muscles, and it is only the transverse slit extending between these, that could by any possibility, permit of the escape of the abdominal contents. The application of a few interrupted sutures, superficially placed in the muscles, sufficient to keep them in apposition until adhesions form between them and the overlying fascia, will eventually prevent the occurrence of hernia. The scar left after such a wound has no tendency to spread. The prevention of hernia is entirely dependent upon the proper technic, which is followed in the closure of the abdominal wound, the main objects of which should be strict asepsis, careful apposition of the more important abdominal layers, and lastly, the prevention of subcutaneous hemorrhage. It is a safe precaution to close off the peritoneum by means of a continuous suture of fine silk. To keep the muscles in close apposition their external sheaths should be sutured, which the author formerly did after the method of Howard Kelly, but now a continuous layer of silk is employed, as it can be more rapidly introduced. In the closure of the skin wound, a subcutaneous suture of silkworm gut is placed in the usual manner and either end is threaded through a thin lead plate which is placed over the long axis of the wound. Aseptic dressings are

placed over the plate and an abdominal binder is applied in the usual manner, the parts being left undisturbed for fourteen days. The plate affords a ready means of preventing the cuture slacking, and does not permit the wound to pucker. The author is convinced that the lead itself exercises a favorable influence on the healing process, for otherwise it would be difficult to account for the perfection of the scar.

Clamp and Cautery in Appendectomy.—The abscission of the appendix and disposition of the stump are the two most important steps in appendectomy. The method probably employed by most surgeons is to ligate the meso-appendix and neck of appendix, invaginate the stump into the cecum after treating it with some antiseptic, and secure it by a pursestring or Lembert sutures. Another much-used method consists in turning down a cuff of peritoneum, pulling up the other coats and ligating these at the base, abscissing, permitting the stump to retract and suturing the peritoneal cuff over the stump. J. R. EASTMAN (*Am. Jour. Obst.*, July, 1904), calls attention to objections attendant upon both of these methods.. A circular ligature about the base of the appendix, either internal or external to the serosa, does not permit of exploration to determine the patulency of the canal of the stump. Should such a ligature be placed beyond a stricture, conditions are established favorable to a fresh attack of inflammation. Some surgeons do not apply an external circular ligature, but cut the appendix, compress the proximal end, and after sounding the canal, invaginate, securing the stump with Lembert or pursestring sutures. This method is especially dangerous when the tissues are thickened or friable, or, if there is extensive suppuration, for in such conditions there is great likelihood of escape of the contents of the appendix or cecum. The writer advocates the use of a light clamp with broad accurately-fitting shields to be applied to the base of the appendix close to the cecum. Such an arrangement would preclude the possibility of pus from the appendix or cecal wall contaminating the neighboring serosa or floating into the peritoneal cavity. The appendix should then be severed with the cautery just above the clamp, the shields protecting the neighboring structures from the heat. Whatever fluid contents that might have escaped, will have been rendered sterile by the cautery. When the shields and clamp have been removed, a thin seared edge remains which may readily be invaginated. Additional advantages claimed for this method are, that the shields hold back coils of intestines, hemorrhage is minimized and the time of operation materially shortened.

NEUROLOGY AND PSYCHIATRY.

Examination of the Cerebrospinal Fluid in Nervous Diseases.—In order to determine the value of these examinations in the diagnosis, E. SIEMERLING (*Berl. klin. Woch.*, May 23, 1904) has made an extensive series of observations, in which not only the histological characters, but also the physical and chemical properties of the fluid were considered. Lymphocytosis, when taken in connection with other symptoms, has usually been considered as indicative of meningeal irritation. Thirty-eight cases of progressive paralysis examined showed a lmyphocytosis in all but one. It may, therefore, be considered as one of the early symptoms. In epilepsy and simple melancholia, negative results were obtained. In all cases of organic and nervous diseases, a well-marked leucocytosis was present, but was absent in pure neuroses and apoplectic dementia. In a case of extradural hemorrhage, the red color seen in the specimen of cerebrospinal fluid remained after the specimen was centrifuged. In another instance where the bleeding took place into and broke through the floor of the third ventricle, the fluid remained clear after the blood had settled to the bottom of the tube.

Polyneuritis and Landry's Paralysis Following Influenza.—E. BRACCHI, in *Gazz. deg. osped.* (June 26, 1904), says that the modern conception of intoxication, whether bacterial or biochemical, to which the nervous system is especially susceptible, has assumed a definite form, namely, as a polyneuritis or an ascending paralysis. Acute infectious diseases conquer the most variable nervous disorders, both in symptoms and location of lesion, the commonest and one of the most serious in its results is influenza. Two cases of Landry's paralysis show new evidence of the toxic nature of influenza, as well as a contribution to the rare complications of influenza. Case I.—A child, aged nine years, suffered from influenza in 1899, recovered, but shortly after developed a paraplegia, and next an ascending paralysis of the trunk and arms, the paralysis being flaccid. Next bulbar, respiratory and cardiac symptoms appeared. The third nerve was paralyzed. Normal cutaneous sensibility was present, except for some paresthesia and delayed sensation. The tendon reflexes progressively disappeared. The sphincters are normal, the temperature not much elevated. Twenty-five days from the onset the symptoms began to disappear in the inverse order of their invasion, leaving great weakness and muscular flaccidity. No trophic disturbance appeared at any time. Complete recovery came after eight months. The second case, a child of two years, suffered from a descending form of Landry's paralysis, occurring during the influenza epidemic of 1899. The child developed a gastro-intestinal type of influenza, and some days later difficulty of swallowing and rapid respiration developed, saliva accumulated in the mouth, and the lips and palate were partially paralyzed. Next the arms became paralyzed, then the trunk and legs. The cranial nerves did not present noteworthy symptoms. The reflexes were absent, sphincters intact, electric reaction unaltered, the skin sensibility was normal, there was marked cyanosis. After fifteen days the bulbar symptoms increased and the patient died of respiratory paralysis. The third case was polyneuritis in a man, about fifty years old, following influenza. In conclusion, the writer notes the predilection of the toxin of influenza to attack the nervous system, even a long time after the acute symptoms have passed. Landry's paralysis has been noticed after typhoid, tuberculosis, syphilis, puerperal fever and measles.

Brachial Neuritis.—This very important topic has been accorded scant courtesy in most of the text-books. CHARLES W. BUCKLEY (*Lancet*, April 16, 1904) states that, aside from injury, gout is undoubtedly the most important etiological factor in producing this symptom. In men the neuritis is often accompanied by the ordinary manifestations of gout, whereas in women, these are apt to be irregular and difficult of recognition. Duplay records the following changes in the joint: (1) Chronic subacromial bursitis and subdeltoid cellulitis with obliteration of the bursa and formation of adhesion between the deltoid and the humerus: (2) chronic inflammation of the capsule leading to thickening; (3) periarticular cellulitis internal to the joint leading to formation of fibrous tissue; (4) congestion of the ulna and internal cutaneous nerves; (5) atrophy of the deltoid. Weir Mitchell says any form of nerve lesion is capable of developing in the joints inflammatory conditions, usually subacute, which so precisely resemble rheumatoid arthritis that no clinical skill can distinguish between the two. The prominent symptoms are pain which varies in

degree, but which may be very severe; tenderness to the affected nerve trunks and of certain cutaneous areas related to them; weakness of certain muscles and limitation of movement; trophic changes, rarely severe and sensory changes, anesthesia and hyperesthesia which often persist after the other symptoms have disappeared. The diagnosis from angina may be very difficult. Aneurism again is a possible source of error and tumors of the cervical spine or of the bones and shoulders may cause pressure on the nerves so as to closely simulate neuritis. Prognosis is variable, the duration being probably never less than three or four months, and disability may extend over a year or more. The older the patient the more difficult the case. Recovery dpends largely on the amount of rest obtained. Young people recover more readily than old. Relapses are not infrequent. A sling is occasionally useful, but much better results are obtained by bandaging the affected limb to the side. As most of the cases are of gouty origin, they should almost be put on antigout treatment. Free blistering along the infected nerve trunks is often very serviceable and galvanism may be a valuable aid in the mitigation of pain. Massage is positively contraindicated as long as there is any acute inflammation.

Uremic Aphasia.—The history of paralysis due to uremia is comparatively recent. Lesegue denied it. Trousseau considered it probable. Lancereaux was the first who in 1875 admitted the possibility. Brunet in 1893 published a clinical observation of uremic aphasia. In 1894 Dufré reported ten such cases. Breton (*Gazetta degli ospedali*, April 12, 1904) reports a case of a man of forty years who in the course of Bright's disease, albuminuria 5 grains to 1,000, was taken by a short attack of incomplete paralysis of the right arm and leg. Motor aphasia, without word deafness, word blindness, nor amnesic aphasia was present. The patient, understanding all that was said to him, and showing no mental confusion. Agraphia was present, but only of the paralyzed arms, as the patient could pick out letters of the alphabet to express his thought. The paralysis improved, but the aphasia persisted. The albuminuria disappeared. In literature uremic aphasia has been described as intermittent, as in other toxic aphasias, and benign, and it was said that it would not persist even in fatal hemiplegias. In the experience of Breton, it is not unusual for the paralyzed limbs to rapidly regain their function, but the aphasia remains invariable unto death. Usually uremic aphasia is accompanied by agraphia and word blindness. Localized edema of the brain, cerebral atheroma and local congestion may be present, caused by the toxic urinary products or ptomains.

Disseminated Sclerosis Simulating Spastic Paraplegia.—Notwithstanding the fact that disseminated sclerosis is by no means a disease of infrequent occurrence, its diagnosis is at times quite difficult, the more so, as we seldom come across typical cases as described in the text-books. Pathologically the disease presents disseminated foci of sclerosed tissue in the brain and spinal cord, and there are no two cases that would, to any considerable extent, resemble each other. The etiology of the affection is uncertain; syphilis does not seem to play any part in it; more importance is attached to infectious diseases, especially smallpox and typhoid fever. The classical case, according to the French school, presents the following array of symptoms: Weakness in the lower limbs, tremor and attacks of dizziness; objectively muscular weakness in connection with rigidity of the lower limbs, increase of tendon reflexes, spastic-paretic gait, intention tremor, nystagmus, the well scanning speech, and finally apoplectic attacks, eventuating in monopolegia. The case of R. A. Fränkel (*Prakt. Vrach*, No. 23, 1904), is rather atypical, inasmuch as the patient, a man of twenty-seven years, single, complained first of difficulty in walking, especially with his left leg, which has kept on the increase for the last two years. The patient gave a negative anamnesis as regards his family, while he himself underwent an attack of diphtheria when eight years of age, and later on passed through a severe attack of malaria, as evidenced from the enlarged spleen on palpation. The patient exhibits a typical spastic gait with the characteristic "gluing" of the toes to the floor; intention tremor in left arm and leg, no muscular atrophy, tendon reflexes very much exaggerated, bladder and rectum functionating normally, otherwise in symptoms mentally sound. At the expiration of three weeks after this examination patient again presented himself with a history of two severe attacks of dizziness accompanied by loss of consciousness of some hours' duration. There could then be no more doubts of the diagnosis of disseminated sclerosis, which had evidently first invaded the pyramidal tract of the lateral column, thus giving rise to symptoms simulating those of spastic paraplegia. The author inclines to malaria by the etiological factor in the given case.

Erythromelalgia.—The case as related by A. M. Virshufsky (*Prakt. Vrach*, Nos. 21 and 22, 1904), is that of a man who, since his twentieth year, when he had passed through an attack of scarlet fever, has been suffering from attacks of pain and pruritus around both wrists followed by the appearance here and there of red spots of various sizes; this redness disappears under pressure, but reappears as soon as the pressure is removed; with this there is also swelling of the hands and fingers; the attack eventuates in sweating of the parts. The same phenomenon is observed around the ankle-joint, but to a less marked extent. The attack lasts for a few hours at intervals of several hours and sometimes of days or even weeks. The patient is otherwise perfectly healthy, and does not feel very bad even during the attacks, obtaining considerable relief by immersing the affected parts in warm water. The patient had subjected himself to various sorts of treatment but without any relief. His anamnesis leads the author to exclude alcohol and syphilis. The group of acroparesthesias is excluded in this case as the attack is not characterized by either anesthesia or hyperesthesia, nor any other disturbances of temperature. The author also excludes tarsalgia, podalgia, as well as the so-called alkinesia algera of Möbius. As the patient is but twenty-one years of age arteriosclerosis is excluded as the causative agency of the affection. Among the skin troubles that may simulate the disease under consideration of erythema exsudatium multiforme and erythrodermia (Pick, Kaposi and others) are mentioned by the author, but must be excluded for the lack of some symptom or other. Thus it remains to group the disease, the chief features of which are erythema, pain, edema, sweating and trophic disturbances (urticaria) all occurring in paroxysms and on symmetrically disposed localities,—as the angiotropho-neurosis described by W. S. Mitchell in 1878 as erythromelalgia. The disease is very rare (possibly not recognized?), as is evidenced from the fact that Oppenheim, notwithstanding his very extensive clinical experience, mentions but two cases seen by him. In the majority of the cases described erythromelalgia was met with either as complicating a general neurosis, or as a local manifestation of some organic disease of the nervous system (myelitis, tumors, gliosis spinalis, etc.), or again as a symptom of a peripheral disease of the nervous

system, and finally as a manifestation of arteriosclerosis. As causative agencies of the disease have been mentioned extreme fatigue of the extremities, climatic influences, rheumatism, preceding infectious diseases and so on. The author is inclined to consider the affection as due to scarlatina in his case. According to Senator the disease is pathologically an active hyperemia of the vessels resulting from paralysis of the vasoconstrictors or spasm of the vasodilators; while the symmetry of the affected parts leads him to consider it as a disease of the central nervous system. Eulenberg localizes the affection to the gray matter of the brain, in its posterior and lateral portions, and considers the symptoms of erythromelalgia as due to dynamic functional alterations of the corresponding ganglia resulting from their exhaustion or pathological condition. As regards treatment, little, indeed, can be effected. The patient (apropos, a pharmacist by profession) tried arsenic, pyramidon, ergotin, salicylate preparations, belladonna, antifebrin, of which the last brought some relief for a few days only. Various hydrotherapeutic procedures are recommended, such as general or local baths, douches, salt water, compresses, as well as local faradic baths; The author considers the last as of some value. Operative interference (as resection of the ulnar, posterior tibial nerves, etc.) seems to have benefited some cases.

OBSTETRICS AND GYNECOLOGY.

Torsion of the Fallopian Tube.—It has fallen to the lot of most men who have operated on a considerable number of various tumors to come across an ovarian cyst with twisted pedicle, associated with hematosalpinx, produced by the torsion of a hydrosalpinx which was adherent to the ovarian cyst. Mr. Bland Sutton, according to HAMILTON BELL (*Brit. Jour. of Obst.*, June, 1904), was the first to record such a case and this in 1891. There is no single exciting cause in the production of this condition, but the presence of a solid tumor on a dermoid has been frequently noted. Here there must be a fairly long pedicle and a smooth peritoneum, free from all adhesions. Others suggest that the alternate emptying of the rectum and bladder may cause torsion, and this latter might produce a gradual twisting but never an acute strangulation. In most cases of pyosalpinx, the adhesions are numerous, and torsion is therefore impossible. Besides, in hydrosalpinx, there are sevparticularly has insisted on the slow or chronic variety particularly, has insisted on the slow or chronic variety of torsion but it is by no means so common as the acute form. The number of twists varies greatly in the recorded cases, from a half turn (*i.e.*, through 180°) up to 4½ twists. The actual number of twists is really of little importance. The usual tumor of the fallopian tube to undergo torsion is a hydrosalpinx, and it is transformed by the hemorrhage induced by the torsion into a hematosalpinx. Pregnancy does not seem to play an important part as a predisposing agent, as diseases of the tube are commonly associated with sterility, absolute or relative. The most prominent symptom, common to all cases, is abdominal pain, of a severe type, situated in the lower part of the abdomen. The pain is sudden in onset and very sharp, often leading to faintness and even syncope. Sometimes the pain radiates to the inguinal region and legs, to the hypochondrium, or to the loins. This has led to wrong diagnosis, such as appendicitis. There is usually little or no interference with menstruation. Peritonitic symptoms are well marked. Vomiting is commonly noted, of varying severity, but never fecal. Frequency of micturition is occasionally present. The presence of a tumor in the abdomen is very characteristic of this lesion. Vaginal examination is useless, unless the tumor is located in the pouch of Douglas. In the fifty cases reported an absolute diagnosis has never been absolute before operation. There is usually an exploratory operation performed for a tentative diagnosis of salpingitis or appendicitis. The treatment is necessarily surgical, and the abdominal is the correct route to operate by. The prognosis after operation is favorable. So far only three deaths have been recorded from such treatment.

Case of Quintuplets.—For the specimens and history of this most interesting case, G. C. NIJHOFF (*Brit. Jour. of Obst.*, July, 1904), is indebted to Dr. J. J. Blécourt, of Hees, Netherlands. The mother was a healthy, robust woman, aged thirty-four years. Seven years previous to the present conception she had been delivered of a male child. The last menstruation was January 20, 1903. In March there was, for a few days, a slight discharge of yellowish fluid, tinged, at times, with blood. The quickening was first felt early in June. At 8 o'clock P. M., July 12, labor pains began. At that time fetal heart sounds could be heard at both sides and in the middle of the abdomen. The fundus uteri was a hand's breadth above the umbilicus. At 8.30, soon after the rupture of the membranes, an immature, but living, female child was born, followed in ten minutes by a second child (female). Some minutes after the birth of the second child, a new bag of waters was made out. At 9 o'clock a third child, a male, was born, in a vertex presentation, soon followed by a fourth child, a female, in footling presentation, with back anterior. Within a few minutes the fifth child, a female, was spontaneously born in footling presentation. The five children were alive, but immature, and survived only one hour. During the puerperium no untoward symptoms appeared, other than an increase in temperature (37.9 C.) on the third day. Immediately after birth the combined weight of the five children was 3,150 grams. The placenta was single, oval in form, with a transverse diameter, 18.5 CM., and longitudinal diameter of 25 CM. Its thickness varied from 0.4 to 3 CM. Its weight was 890 grams. At its fetal side five separate umbilical cords were inserted, each by a distinct sac formed from the fetal amnion, three of these sacs were enclosed by a common chorion. The two others had a separate chorion. The author thinks that these quintuplets may be regarded as the product of the fecundation of three ova. In the mother's family several cases had occurred of multiple pregnancy. Her mother once had twins among other children. Two maternal uncles became fathers of twins. A maternal aunt was delivered of triplets. There were no cases of multiple births in the father's family.

Significance of Fever During Labor.—The etiology, course and prognosis of fever coming on during labor, have been carefully studied in a series of 200 births in the clinic at Königsberg by E. IHM (*Zeitsch, f. Geb., u. Gyn.*, Vol. 52, No. 1). Primiparæ seemed to be most often affected (43 per cent.). Other etiological factors were narrow pelvis or rigid soft parts, improper position, prolonged duration of the labor, early rupture of the membranes. The prognosis for the puerperium was shown by the following: 41.5 per cent. continued to have a temperature, 8 died (5 of sepsis), 26 developed a severe puerperal fever. The effects on the children were shown by the fact that 36 per cent. died. Therapeutic indications point to measures for the purpose of hastening delivery. For this he suggests hot vaginal douches, dilatation of the cervix by rubber bags or Bossi's instrument, version, forcing the head into the pelvis and applying the forceps, rupture of the membranes. Version he considers a rather dangerous procedure.

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THE SEGREGATION OF URINE.

THAT this difficult task is one of the most important to deal with accurately, in every case of suspected surgical renal involvement there is not the slightest doubt. If there were, the multiplicity of instruments and methods for establishing this segregation must convince the disbeliever of his fallacy.

Albarran, of Paris, one of the greatest of genito-urinary surgeons, was the first to popularize the catheterization of the ureters. In the male this technic is extremely difficult, calling invariably for the hand of a thoroughly trained expert. Six years ago there were few in New York who could do this catheterization with any degree of certainty or rapidity. To-day, of course, there are a number of men who experience no difficulty in the average case and with the assistance of improved instruments readily pass the ureterovesical valve. Nature's arrangement of this admirable barrier to the outside world speaks trumpet-voiced in disfavor of ureteral catheterization. A technic so thoroughly at variance with her plans and methods for the protection of the organism against invasion from the outside, could have but one ending. Thus it is that ureteral catheterization for the most part has had its day and is passing.

Lambotte, of Brussels, constructed a rude instrument in 1890 which was the precursor of Harris's more perfect device. The segregator which he devised is of extremely ingenious construction. It depends upon the principle that the base of the bladder may be lifted by a tent-like structure, which is introduced into the rectum. This creates two lakes, one on either side of the ridge, each one having a ureteral opening near its center. Moynihan, in an article on intravesical separation of the urine, in the *British Medical Journal*, July 2, 1904, states that while Harris's instrument is most ingenious in construction, in actual working it is found not to be strictly reliable.

In order to gather a sufficient amount of urine for differential purposes, the segregator must remain in place for at least twenty minutes or half an hour,—the period of time being determined by the rate of urinary secretion. Its introduction and its tolerance for this length of time is confessedly annoying and disquieting to the patient.

Moynihan, in his article referred to, pictures the intravesical urinary separator of Cathelin and of Luys. These instruments differ only in the very smallest and most unimportant details, and a description of one will therefore suffice for the two. It consists of three portions, a central one within which lies a chain attached at the handle of the device to a wheel. The instrument is straight until the last two inches are reached, where there is a marked curve, forming almost a semicircle. A screw is so arranged that from the outside one may tighten the chain, whereupon, instead of lying in the hollow of the curve of the instrument, as it does during introduction, it is raised up across the metal semicircle mentioned. Attached to this chain is an india-rubber sheathing. This is lifted by the chain and a septum is thus created.

When it is wished to utilize this instrument, it is passed in the manner of an ordinary sound, and after entering the bladder is withdrawn until the beak is felt to impinge tightly against the pubes. The chain is then tightened and the diaphragm is created. Moynihan states that various sizes of Cathelin's instruments are now made to fit the various-sized bladders which one is sure to encounter even in average-sized adults. The author admits that there is a difficulty in knowing that for a certainty the bladder has been tightly diaphragmed, but he expresses the belief

that a certain amount of tactile education and the use of these various-sized instruments will do away with this possible difficulty.

The opinion of such an extremely able operator as Moynihan must have very great practical weight. His conclusions therefore are quoted as follows: "My present opinion is in favor of the use of Luys's instrument for the female and of Cathelin's for the male, but I am prepared to admit that a more extended experience may modify my opinion. There can be no doubt that both instruments are of great practical value. I propose shortly to publish a complete series of observations, but meanwhile I may call attention to two cases reported by me in the *British Medical Journal,* April 30, 1904, in which great help was given by the separation of the urine."

J. Lynn Thomas (*British Medical Journal,* July 2, 1904), in speaking of the advantage of the Cathelin separator over other methods, particularly in reference to the discomfort caused, states that he left the instrument in a male patient's bladder for one hour and twenty-five minutes with very little discomfort. He says that since the publication of Bickersteth's article, in the *Lancet,* March, 1904, both the Luys and the Cathelin instruments have become well known and are receiving wide attention throughout England. He has found Cathelin's instrument to effect such a perfectly tight division of the bladder, that on introducing water, colored with potassium permanganate on one side, he was able to withdraw clear water, which had been introduced at the same time as the permanganate water from the other side. This showed that there had been absolutely no mixing. Similarly he found in another patient suffering from hematuria, that Cathelin's instrument drew highly colored bloody urine from the right side and clear urine containing albumin from the left. The first was alkaline, the second was acid. He believed at the time that the albumin on the left side might be due to a trace of the right-sided urine leaking past the diaphragm of the instrument. After operation, however, at which he removed a right-sided carcinomatous kidney, the urine became clear, but continued to contain albumin just as it did prior to operation. This shows that there had been no leaking.

At the recent meeting of the American Surgical Association in St. Louis, an instrument very similar to Cathelin's was exhibited. It had been devised two or three years ago by the member who showed it. He stated that he exhibited it simply for the purpose of showing that he had been experimenting along these lines without success. The instrument in his opinion was in no way comparable to the Harris segregator and he advised the members that it was not practical to effect a division of the bladder into two halves with sufficient accuracy to be of clinical importance or use. This opinion was not disputed by any member present, the evident sense of the Association being that it concurred with the opinion expressed by the speaker.

Coming as they do so closely upon each other, these very diverse views on a very pertinent subject of extremely prominent British and American surgeons are interesting and instructive, but it looks at the present moment as though our transatlantic confrères have the best of this argument.

EPIDEMIC CEREBROSPINAL MENINGITIS.

During the last six or eight months New York City and many other places here in the East have suffered from an epidemic of cerebrospinal meningitis, and its lessons should not be allowed to pass unconsidered. The usual mortality from the disease is said to be something over 30 per cent. In the present epidemic at least this high death rate has been reached, and there are some who consider that nearly one in two of the patients who were victims of the genuine epidemic disease succumbed to it. It must not be forgotten, however, that usually in epidemics the disease is more fatal after it has existed for a time and has, as it were, acquired virulence by passing through series of susceptible individuals, and that the mortality has been known to go above 60 per cent. When the reports are all in, the experience may prove sadder than at first anticipated.

When epidemic there is every reason for taking what might seem extreme precautions against the spread of the disease. At the present time it is not known how the affection is communicated. Some reports of development of the disease after the occurrence of injuries of various kinds, especially those inflicted on the street, indicate that the disease may be contracted by contamination with street dirt, as is tetanus. The analogy with tetanus, pursued still further, would not make the limitation of the disease to the central nervous system so surprising. It seems not impossible, however, that in time contact with sufferers from the disease may give opportunity for the spread of the specific micro-organism. It has been often noted in Europe, and we believe also in this country, that the first case of the disease seen in a neighborhood occurred in a

tramp or wanderer. The study of this possible method of transferring the disease might throw great light on the methods of transmission.

The disease is usually said to be associated with filthy or uncleanly surroundings. The part the tramp is supposed to play in the matter of sporadic cases would seem to be in accord with this. There are, however, many cases of the disease reported among the well-to-do, where cleanliness is a constant habit. In the theory of the agency of street dirt in the causation of the disease, it must not, however, be forgotten that while unlike tetanus, the micro-organism seems to be present not constantly, but only at times of epidemics. At such times all wounds that have been contaminated with street dirt require more careful attention than before, even though they may not be severe.

While cerebrospinal meningitis is spoken of as an epidemic disease, and occurs in marked epidemic form about once every decade, it must be remembered that the affection is practically always existent, and that in Germany, where careful studies and analyses of statistics have been made in order to ascertain the course of frequency of the disease, it has been found that in different parts of the country some cases of the disease are always occurring. The same seems to be true here in the United States, for, as was pointed out by Dr. William Browning, in the *Brooklyn Medical Journal* for May, in an article on cerebrospinal meningitis in Brooklyn, some cases of the disease have been occurring at nearly all times during the last ten years. He considers that the germ is widely and continuously present in Brooklyn, and the possibility of an epidemic is always with us, should the unknown favoring conditions arise. In this regard it will be remembered that some three years ago six cases were reported on board the old receiving-ship Vermont, in July, 1901, and that it has been noted that in proportion to the population, according to Dr. Browning, the wards touching on the East River, Newtown Creek, or Gowanus Canal, that is, on the commercial waterways of the town, have about twice as many cases of the disease as the interior wards. Brooklyn is not an exception in this. Other cities with as carefully kept statistics show the same state of affairs.

At the May meeting of the New York branch of the New York State Medical Association, the discussion of epidemic cerebrospinal meningitis brought out many valuable opinions with regard to the differential diagnosis. As the ultimate resort lumbar puncture must remain the most important diagnostic aid. If the first case or two that occurs in the district takes on the typical appearance indicated by that unfortunate name, spotted fever, and then gives signs of spinal meningitis, the diagnosis may be easy. As pointed out by Dr. Winters, however, cases may be extremely anomalous in type and may have a very insidiously deceptive appearance from that of mild tetanus to that of severe ptomain poisoning. Under such circumstances the diagnosis can be made only by autopsy, unless the *Diplococcus intracellularis* be found in the cerebrospinal fluid. In New York this micro-organism has been practically always found. There were some patients with true epidemic cerebrospinal meningitis in whom it was not found, but they were very rare.

As lumbar puncture, besides being of distinct diagnostic value, is also of great service in relieving the symptoms of coma and other manifestations due to high pressure within the spinal canal and the cerebral ventricles, there should be little hesitation in practising it. It is easy of accomplishment, it gives practically no pain, in a severe case the child is too comatose to notice it, and it represents the best possible means of affording relief. Its frequent repetition, whenever indications call for it, as when coma becomes deeper, is the only active remedial measure at present known for one of the most fatal of diseases. It has been practised many thousands of times without any bad results, and while it sometimes fails of its purpose, owing to anomalous conditions within the spinal canal, this constitutes no good reason for hesitating with regard to its employment.

Notwithstanding the high hopes raised by the favorable reports of the intraspinal injection of dilute solutions of antiseptics, especially from Portuguese observers, this method has not seemed to be of especial service in New York.

THE LONGEST EDITORIAL RECORD.

In speaking of Dr. Shrady's retirement from his editorial position with the *Medical Record*, in our last issue, we referred to his protracted relation with that periodical as "establishing for himself the longest editorial record in the country." In obedience to our invariable rule, we take this, the earliest opportunity, to correct our own error. Although Dr. Shrady's tenure of thirty-eight years was a long and honorable one, in point of duration it does not compare with that of the

elder Dr. Hays, as editor of the *American Journal of the Medical Sciences*, which continued uninterruptedly from its establishment in 1820 to his death in 1879.

Entering as he did an uncultivated field, there was trying work for Dr. Hays before the old world could be made to lend a respectful ear to medical progress in America, as recorded in the pages of his periodical, but he lived to receive universal recognition of the merit of his pioneer labors. That his editorial career fell at a later period detracts not a whit from the value of Dr. Shrady's life work, for which the MEDICAL NEWS has no sentiment but that of respect and praise.

ECHOES AND NEWS.

NEW YORK.

Poisoned by Herb Decoction.—Two Italians are in Roosevelt Hospital suffering from belladonna poisoning. When taken to the hospital one was unconscious, the other so violent that it took several men to hold him down. The cause of the trouble is said to be a decoction made by one of the men, which both he and his workman drank as a remedy for a disordered stomach, and which was believed to be made of malva leaves. Malva leaves are said to be a regular home remedy of the Italians for stomach disorders. A few minutes after the men drank the decoction both became drowsy, but this state changed suddenly to great frenzy in the one while being conveyed to the hospital. A chemical analysis of the contents of the men's stomachs showed traces of belladonna.

Civil Service Examinations.—The State Civil Service Commission announces general examinations to be held September 10, 1904, including the following positions: Apothecary in State hospitals and institutions; architectural draughtsman; assistant steam engineer, Erie county service; bridge draughtsman; clerk; junior clerk; fireman; librarian, court of appeals library, Syracuse; physicians in State hospitals and institutions of both regular and homeopathic schools; trained nurse in State hospitals and institutions; woman officer in house of refuge and reformatories for women. Applications for these examinations must be made on or before September 3. Full particulars of the examinations and application blanks may be obtained by addressing the chief examiner of the commission at Albany.

Report of Contagious Diseases.—For the week ending Aug. 13, the Board of Health report is as follows:

	Cases.	*Diseases.*
Measles	95	8
Diphtheria and croup	211	23
Scarlet fever	50	2
Smallpox	..	1
Chickenpox	9	..
Tuberculosis	328	153
Typhoid fever	86	18
Cerebrospinal meningitis	..	24
Totals	779	229

Lying-in Hospital Appointments.—The following men have been appointed to the hospital staff: Drs. C. W. O'Connor, W. H. Sneider, E. K. Tanner, J. W. Edwards, to go on duty in September; Drs. H. I. Cauth, S. W. Hamilton, A. R. Keith, to serve in October; Drs. R. M. Beach, W. S. Buckley, H. H. Armington, to serve in November; Drs. C. L. Boyd, C. W. Chapin, H. L. J. Dollard, to serve in December. Alternates, Drs. Shanley and McCollum.

PHILADELPHIA.

Philadelphia Hospital.—William F. Defrates, member of the Board of Education from the Thirty-ninth Ward, has been appointed superintendent of the Philadelphia Hospital to succeed the late Robert M. Smith.

Hospital Beds Endowed.—Requests of $10,000 to the Presbyterian Hospital and $5,000 to the Children's Hospital are contained in the will of Cornelia Thompson.

University Dental School Returns to Three-Year Course.—After maintaining for one year their four-year course in dentistry the University of Pennsylvania has been compelled to accede to the action of the National Association of Dental Faculties and reduce it to three years. The university opposed to the last this action, but was overruled. In an announcement to present and prospective students, Dean Kirk states that financial interests compel the change, but they regard the return as only temporary; the university believes that a four-years' course will ultimately be established upon a sound basis.

Medical Colleges Criticized.—The State Board of Medical Examiners announce that of the 379 candidates at the recent examination, 73 failed, a percentage of nearly 20. The usual failures are from 13 to 14 per cent. The fault is believed to lie in the curriculums of the colleges which instruct their students in the specialties to the exclusion of broad general principles. General illiteracy of the candidates is another reason for failures. Members of the board favor an investigation of teaching methods; this, however, would require legislative sanction.

First Report of the Department of Public Health and Charities.—The report of the Department of Public Health and Charities of Philadelphia from its organization in April, 1903, to the close of that year, shows very encouraging results. Director Martin thus summarizes the most important accomplishments of the year: (1) Securing the co-operation of the profession in the way of the special advisory board and the aid of representative medical societies of the city; (2) the appointment of 37 additional medical inspectors and two eminent diagnosticians, Drs. Welch and Schamberg, for the suppression of contagious diseases and the medical inspection of schools; (3) systematic courses of instruction for inspectors in the various bureaus; (4) the appointment and organization of an adequate corps of milk, meat and cattle inspectors; (5) the building of two portable steam chambers for disinfecting and cleansing infected houses; (6) appointment of a chief resident physician at the Municipal Hospital; (7) improvements at the Philadelphia Hospital, including tuberculosis pavilions and roof garden, installation of a modern record system, appointment of a salaried director of the clinical laboratory, and the naming of two eminent consulting surgeons, Drs. Brinton and White. The most pressing needs of the department at present is a hospital for the insane established on a suitable farm, remodeling of the Philadelphia Hospital on modern lines and the establishment of a plant for the manufacture of antitoxin and vaccine virus.

Report of the Bureau of Health for 1903.—The annual report of the Philadelphia Bureau of Health for 1903 shows a general death rate of 18.82 per thousand, 1.15 higher than the preceding year. Leaving out the deaths from accident, suicide and homicide, the rate would be

17.92. During the year there were 3,043 cases of diphtheria, 4,188 of scarlet fever, 1,637 of smallpox and 8,701 of typhoid fever. All of these show an increase over 1902, varying from 295 in smallpox to 3,695 in typhoid fever. Regarding the occurrence of typhoid fever three facts are apparent: (1) Outbreaks are liable to occur at any season of the year; (2) certain wards are most affected; (3) an unusual number of cases may suddenly appear in isolated localities. The conclusion is that outbreaks are due to widespread and continuous contamination of the water supply. Occasional local outbreaks are due to other causes, and for these the milk supply is principally blamed. Special efforts are being made to locate such milks. Statistics show that the Municipal Hospital, in which are confined smallpox cases, must still be considered a focus for the dissemination of that disease. Although all precautions are taken, no permanent improvement is looked for until removal of the hospital to a new site.

Disinfection of Houses.—Experiments and bacteriological investigations have shown that the most efficient method for use in routine house disinfection is the direct application by means of an atomizer of formaldehyde in solution to all the surfaces of the rooms. The solution used is 5 parts of the 40 per cent. solution of formaldehyde to 95 parts of water, approximately a 2 per cent. solution of formaldehyde gas in water. A machine devised in the laboratory throws a finely divided stream a distance of eight feet. For each 1,000 cubic feet an amount of the solution equal to a pint of the 40 per cent. formaldehyde is used. Tests show 100 per cent. of surface disinfection and more than 85 per cent. of test objects containing various bacteria. Because of the possible presence of protozoa in the houses occupied by smallpox patients, the above process was for a time supplemented by the burning of sulphur. This was finally abandoned because of the lack of means for readily determining its efficiency, and also because of its destructive effect upon certain articles of furniture when wet from the spraying.

Widal Reaction in the Diagnosis of Typhoid Fever.—During 1903 this test was made a greater number of times than in any preceding year, many specimens coming from Butler. Out of 6,341 samples, representing 5,508 patients, there was a discrepancy between the laboratory and clinical diagnosis in 6.94 per cent. Since 1897, 28,862 examinations of samples from 24,588 cases have been made. Among them there was a discrepancy of 4.9 per cent.

CHICAGO.

Incorporation of Swedish Hospital.—Articles of incorporation were issued July 20 for the Washington Park Hospital, to be built near Washington Park. The institution has a capital stock of $50,000, and has at present accommodation for thirty patients in a building at Sixtieth street and Vincennes Avenue.

Hospital Benefits by Lawn Fête.—The lawn fête given by the St. Francis Hospital Association at Evanston last week netted $1,400 to the funds of the hospital.

Week's Deaths.—Acute intestinal diseases caused 120 of the 473 deaths for the week ended August 6; consumption, 58; violence, 44; heart diseases, 34; Bright's disease, 33, and pneumonia, 27. The annual death rate per 1,000 was 12.78, which compares very favorably with 14.29, the rate for the corresponding week last year.

Typhoid Threatens Strikers and Strike-Breakers.—Typhoid fever, which threatens to become epidemic among the strikers' families in the district west of the stock yards, is feared in the ranks of strike breakers. A non-union workman at the Armour plant has been removed from his home to a hospital suffering from the disorder. A man and a woman employed as strike breakers at the Swift plant were removed to hospitals suffering from ailments supposed to be typhoid fever.

Smallpox in Dowie's Land.—The citizens of Waukegan, Wis., are still uneasy concerning the reported epidemic of smallpox at Zion City, Ill., and are awaiting the investigation by the inspector, Dr. E. F. Baker, of East St. Louis, sent there by the State Board of Health. Dr. Herman Spalding, of the Chicago Health Department, a deputy State health inspector, visited Zion City and examined the cases there. He found sixteen cases of smallpox, but pronounced them a mild form of the disease. None of the patients has been vaccinated, however, as vaccination is not permitted in Zion City. Dr. Spalding protested against this. The sixteen patients were all quarantined at an isolation hospital, a frame structure two miles from Zion City on the lake shore. The hospital is well guarded. The houses from which the cases were taken are also quarantined and under guard.

GENERAL.

Dr. Osler Going to Oxford.—King Edward has approved the appointment of Dr. William Osler, of Baltimore, as Regius Professor of Medicine at Oxford University, in succession to Sir John Burdon Sanderson.

Dr. Osler is physician in chief of the Johns Hopkins Hospital and Professor of Principles and Practice of Medicine, to which positions he was appointed in 1888. His contributions to medical science have been many and valuable, and have made him well known as a physician, pathologist and physiologist throughout the medical world. He was born in Canada and received his education at Trinity College School and Trinity College in Toronto. He studied medicine at McGill University, Montreal, and at the Toronto School of Medicine, where the degree of Doctor of Medicine was conferred on him. He further pursued his studies in Berlin, Vienna and at the University College, London. The faculty of McGill University elected him to the chair of the institutions of medicine in October, 1874. He was elected pathologist to the Montreal General Hospital in 1875, and three years later was appointed physician and lecturer on clinical medicine in the summer session.

Dr. Osler was unanimously elected by the University of Pennsylvania to the chair of clinical medicine in 1884. He remained there a year, and in 1885 was appointed Gladstonian lecturer in the Royal College of Physicians and Surgeons, London. A short while afterward he was appointed Cartwright lecturer in the College of Physicians and Surgeons, New York. He is a Fellow of the Royal College of Physicians, London. The University of Aberdeen, Scotland, and several American universities have conferred upon him the degree of LL.D.

We are glad to be assured that Dr. Osler does not intend to sever his present relations with the Johns Hopkins University until June, 1905, or after the completion of the approaching session.

Cholera in Russia.—A dispatch from St. Petersburg states that the sanitary authorities and the police are co-operating to suppress an outbreak of Asiatic cholera in that city. There have not been many deaths, and the number is not stated officially.

Study of Mosquitoes in Montana.—The sixth session of the University of Montana biological station at Big Fork, on Flathead Lake, in that State, is engaged in investigating the mosquito. The work is especially difficult owing to their disappearance from the swamps in which they had been found unbearable in other years.

By diligent search of the pools, puddles and swampy places adjacent to the laboratory a considerable quantity of material, both in the larval and adult state, has been secured, and breeding experiments are being carried on in the laboratory. Seven distinct species have thus far been found as a result of two weeks' study. *Anopheles maculipennis* is very rarely found. This is the species that is known to carry malaria. No malaria has ever been known to have occurred in the region. The absence of mosquitoes is due almost entirely, if not entirely, to the absence of rainfall this spring. The mosquito crop comes largely from small and temporary pools and puddles, where other forms of insects do not have time to mature. The mosquito has a shorter period of life in water than most insects, shorter than that of any of its enemies, and can live where few other forms of life will exist. Clearing the region of underbrush so the sun may dry up the puddles, draining the swamps and burning débris has done much to reduce the number of mosquitoes and abate the nuisance.

Fourth Pan-American Medical Congress.—The meeting of this congress, which was to have convened the latter part of December of this year at Panama, has been postponed until the first week in January. This was done at the request of many physicians who proposed to attend it, as they desired to be at home with their families during the Christmas holidays. The delegates from this side of the continent will therefore leave on Tuesday, December 27, if they go down from New York by the regular Pacific Mail Lines, or at other dates if they go by way of New Orleans or Jamaica. The congress will be held from the 4th to the 7th of January. The dates of sailing from the Pacific Coast have not yet been ascertained. The officers of the congress appointed by President Amador, of the Republic of Panama, are: Dr. Julio Icaza, Dr. Ciro Uriola, Dr. J. Calve, Dr. Carlos Cooks, Panamanians; Dr. Gorgas, chief of the Panama Canal Sanitary Commission, Drs. Carter and Ross, Americans; Dr. Manuel Corales, Cuban; Dr. M. Stern, English, and Dr. Oduber, Dutch. This bids fair to be the most successful Pan-American medical congress that has ever been held, on account of the central situation of Panama and its easy approach from both sides of North America, Mexico, Central American Republics, as well as from the countries on the north and west sides of South America. There will be but four sections at this congress—surgery, medicine, hygiene and the specialties.

Research Work in Government Laboratories.—The recently erected laboratory of the Public Health and Marine Hospital Service is doing some very good work along experimental lines. The zoological division has been investigating the hook worm, besides doing much general work. Anything in the shape of worm or animal life affecting the human body can be sent there for determination. While specimens from private physicians have thus far been examined without charge, the laboratory will take pains not to compete with men who are conducting similar work on private account. All the drugs used in the Public Health and Marine Hospital Service, which has 60,000 patients a year, are examined in the pharmacological division. This branch of the laboratory is also on the lookout for new alkoloidal principles in drugs, and is constantly studying the effects of new drugs upon animals. This is chiefly research work. Of late some of the most important experiments have been made with quinine compounds, and although the results are not quite ready for presentation, the prospect is that some important discoveries may be announced. The aim was to secure a compound which would kill the malarial parasite that quinine is so effective in attacking, but one which would be without the ordinary disagreeable effects of that drug. Experiments have gone far enough to show a quinine derivative which is a great deal more effective on these microorganisms, but not so injurious to warm-blooded animals. The tests have not yet been applied to human beings, but the poisonous qualities of the compound have been pretty well ascertained. It takes twice as much of the new quinine to kill a mouse as of ordinary quinine, while it is known to be more effective against the malarial organism. The findings along this and similar lines are published in the laboratory bulletins, which are issued from time to time.

The American Medical Society for the Study of Alcohol and Other Narcotics.—This association was organized June 8, 1904, by the union of the American Association for the Study of Inebriety and the Medical Temperance Association. Both of these societies are composed of physicians interested in the study and treatment of inebriety and the physiological nature and action of alcohol and narcotics in health and disease. The first society was organized in 1870 and has published five volumes of transactions and twenty-seven yearly volumes of the *Quarterly Journal of Inebriety*, the organ of its association. The second society began in 1891 and has issued three volumes of transactions and for seven years published a Quarterly Bulletin containing the papers read at its meetings. The special object of the union of the two societies is to create greater interest among physicians to study one of the greatest evils of modern times. Its plan of work is to encourage and promote more exact scientific studies of the nature and effects of alcohol in health and disease, particularly of its etiological, physiological and therapeutic relations. Second, to secure more accurate investigations of the diseases associated or following from the use of alcohol and narcotics. Third, to correct the present empirical treatment of these diseases by secret drugs and so-called specifics and to secure legislation, prohibiting the sale of nostrums claiming to be absolute cures containing dangerous poisons. Fourth, to encourage special legislation for the care, control and medical treatment of spirit and drug-takers. The alcoholic problem and the diseases which center and spring from it are becoming more prominent and its medical and hygienic importance have assumed such proportions that physicians everywhere are called on for advice and counsel. Public sentiment is turning to medical men for authoritative facts and conclusions to enable them to realize the causes, means of prevention and cure of this evil. This new society comes to meet this want by enlisting medical men as members and stimulating new studies and researches from a broader and more scientific point of view. As a medical and hygienic topic the alcoholic problem has an intense personal interest, not only to every physician, but to the public generally in every town and city in the country. This interest demands concentrated efforts through the medium of a society to clear away the present confusion, educate public sentiment, and make medical men the final authority in the consideration of the remedial measures for cure and prevention.

OBITUARY.

Dr. Lindhurst C. Dodge, of Rouses Point, N. Y., died suddenly at his home on the night of August 13. He was sixty-three years old.

Dr. A. W. Warden, of Union Hill, N. J., died August 13, in the Presbyterian Hospital, from blood poisoning, contracted three weeks ago while performing a surgical

operation. He was advised to have the arm amputated, but would not consent to it, being confident of recovery. Dr. Warden was prominent in local affairs of Union Hill, having served in the Board of Education and having been the organizer of the first public library in the town. He was forty-seven years old.

Dr. JOSEPH WIENER, active in many philanthropic and scientific movements, died at his residence, 1046 Fifth avenue, August 14, of heart disease, after an illness of several months. He was born in Hauska, Bohemia, April 5, 1828, and came to this city in 1849. For thirty-five years he was actively engaged in the practice of medicine here, during a large part of this time as an associate of the late Dr. William Detmold in the chair of military surgery at the College of Physicians and Surgeons. He was also one of the founders of the department of pathology of that institution prior to its incorporation as a part of Columbia University. Dr. Wiener retired from practice more than twenty years ago. Throughout his entire life Dr. Wiener was an enthusiastic lover and collector of objects of art, and was a member and patron of the Metropolitan Museum of Art and of the Museum of Natural History. He was also a member of the Geographical Society, the Academy of Sciences, the Numismatical Society, the Symphony Society, the Oratorio Society, and various other scientific and literary organizations. He was one of the founders of the Palette Art Club. In 1885 he presented the statue of Washington Irving, which now stands in Bryant Park, to the city. He was also one of the organizers and first vice president of the Union Square Bank. During the Civil War he was chairman of the Republican organization in his district.

Dr. HENRY B. MCCARROLL died suddenly last Wednesday at his parents' home in Morristown, N. J., from pneumonia. He was born October 7, 1856, and was a member of the Yale class of '78 and was graduated from the College of Physicians and Surgeons of New York City in 1881. He spent two years in hospital work and then became an instructor of medicine in the Post-Graduate Hospital.

CORRESPONDENCE

OUR PARIS LETTER.

THE WATER QUESTION—PURIFICATION AND EPANDAGE—DRINKABLE WATER AND SEWER WATER—BIOLOGICAL PROCESS—ACTION OF MICROBES—FAILURE OF EPANDAGE.

PARIS, FRANCE, August 6.

IDEAS are like certain plants, some bloom out and fructify very quickly; others, on the contrary, take centuries to pierce and arrive to maturity. Such, for example, is the water question, which has interested man ever since drinking water has been heard of, but presents a new phase and added attraction during the last ten years on account of the necessity of epuration. Naturally men have always preferred pure, fresh, limpid water. The Romans, who were masters in the art of construction, at great expense brought drinkable waters into their cities by means of superb aqueducts, the remains of which are still admirable.

The idea has prospered since then, and the first care of every town council is to bring in good water for the inhabitants. Paris has expended more than $30,000,000 to bring in the waters of the four smaller rivers, which supply about 320,000 cubic meters of water a day besides the filtering reservoirs established for the Seine water. Our ancestors gave little attention to the cleansing of their towns. The rivers, as the Tiber of old, and as the Ganges to-day, played the part of sewers, carrying along all the filth of the towns and thus becoming transformed into a permanent source of danger to public health. In the nineteenth century the grand industrial and manufacturing outburst by the multiplication of factories everywhere added a new element, causing increased silting of the rivers and contamination of their waters. This time the evil brought its own remedy. Until then man's health alone had suffered from the contamination of rivers. Now, as these received the waste and refuse of factories, certain new substances were introduced which rendered the springs and rivers unfit even for fish life. It is no longer clear and limpid water that flows among the meadows, but a black and pestilential liquid, a source of infection and epidemy.

Dr. Calmette, Director of the Pasteur Institute at Lille, taking his example from trials made in England and Germany, has introduced into France the biological purification of residuary water. By this is meant the complete destruction of putrescible organic matters characterized by clarification and their mineralization, and not simply a mechanical separation. Microbes or fire are the only agents capable of effecting this destruction.

In the epandage or refection of water the cultivated soil transforms all the filth that is poured upon its surface into gaseous elements which escape into the atmosphere. But this is only possible with deep, porous, well-drained soils. In the experimental fields at Achères, near Paris, one hectare (2.47 acres) of one meter's depth can absorb 110 cubic meters of sewage water a day. A town of 100,000 inhabitants, reckoning 100 liters of water per day for each inhabitant, would require a surface of epandage equal to 91 hectares for 3,650,000 cubic meters per annum. At this rate this system is only possible for large towns with vast sandy or calcareous fields in their neighborhood, which must at the same time be very absorbent and of little value.

The hygienic results of experiments made at Gennervilliers, Achères, and especially at Carrieres-Triel, have been far from satisfactory. It was an error to reckon on the purifying powers of cultivated soil. Plants are only able to absorb organic matters when these are in a state of soluble nitrates. Moreover, the accumulation of organic matter favors the development of mosquitoes and flies, which are the vehicles of numerous infectious diseases. For the last ten years Percy Frankland, Gilbert Fowler, Sir H. Roscoe, in England, Hiram Mills and Kennicut, in America, have drawn the attention of sanitary engineers to this question. The system of biological epuration is employed with success in twenty-two towns in England. Manchester purifies in this way 180,000 cubic meters of sewer water a day. Formerly this town employed the system of chemical precipitation, which produced an enormous quantity of mud, which had to be carried to the sea in boats. This method of epuration, modified by Dr. Calmette, who has found the perfect solution of the difficulty consists of three distinct operations; a decanting and separation of the non-putrescible solid residues; a dissolution of organic matters in a septic covered tank under the influence of anaerobic microbes; and, lastly, a transformation of the organic matter into nitrates by their oxidation on bacterial beds, or species of epandages formed of scoriæ of metallic dross; this oxidation being performed by anaerobic microbes.

The sewer water, after a sojourn of twenty-four hours in the septic tank, and after a passage over two bacterial beds, in each of which it remains two hours, comes out perfectly pure and limpid. These bacterial beds, formed of a layer of scoriæ one meter thick, can serve three times in twenty-four hours. Each period of eight

hours is thus divided; one hour for filling, two hours full, one hour for emptying. Four hours are necessary for airing the bed.

By the study of the different methods of epuration now employed we can see, from the experiments of Dr. Calmette, successfully carried out at the village La Madeleine, near Lille, that biological epuration alone gives good results. By this process 5,000 cubic meters of residuary water per hectare can be purified in a day; that is to say, a volume of polluted water at least forty-five times greater than by epandage or refection, which only purifies 110 cubic meters per hectare.

Other experiments have been made at Say's sugar refinery of Pont d'Ardres, under the supervision of Mr. Cronier. These diverse results prove the failure of epandage, as actually practised, and foreshadow the substitution of the biological system. The cleansing of manufacturing districts and towns will thus make large strides, and hygiene will have registered another victory.

SOCIETY PROCEEDINGS.

NEW YORK STATE MEDICAL ASSOCIATION—NEW YORK COUNTY BRANCH.

Regular Monthly Meeting held May 16, 1904.

The President, Alexander Lambert, M.D., in the Chair.

Appendiceal Enteroliths.—Dr. Frederick Holme Wiggin presented the specimens of an appendix recently removed in which there were a number of concretions. The symptoms of the case had been those of a mild appendicitis. There was no perforation found, but in the neighborhood of the largest stone, there was a dangerous thinness of the wall of the appendix, and pressure had produced an area of inflammation through which rupture with consequent peritonitis would also inevitably have taken place in a short time. It is evident, of course, that these stones have taken a long time, very probably many years to form, and yet there had never been any previous symptoms of appendicitis, and nothing pointing to the existence of a serious pathological condition in the right iliac fossa.

In discussing the specimens Dr. Alexander Lambert said that the occurrence of enteroliths in the appendix were by no means uncommon, and that undoubtedly their presence frequently was the basis of the tendency to appendicitis, whenever a condition of lowered resistive vitality asserts itself, or some especially infectious material finds a lodgement in the neighborhood.

SYMPOSIUM ON CEREBROSPINAL MENINGITIS.

The principal part of the scientific business of the evening consisted of a series of papers on epidemic cerebrospinal meningitis, with special reference to the epidemic at present under special observation in many cities of this country, and the early differential diagnosis of this disease and its treatment.

Lumbar Puncture.—Dr. Thomas Wood Hastings said that since the introduction of spinal puncture much that is definite has been learned of the bacteriopathology of various forms of spinal meningitis. This puncture is usually performed by inserting a needle between the third and fourth lumbar vertebræ, the fourth being usually the best for this purpose, because the dura is adherent to the bodies of the vertebræ in this region and is not pushed before the needle. The method employed is either that of Quincke with the patient in the lateral position, or that of Führinger with the patient in the sitting position. Those who have had most experience with lumbar puncture apparently prefer the sitting position, but it is still an open question and a matter of habit rather than choice.

Therapeutics of Lumbar Puncture.—Lumbar puncture has, however, besides its diagnostic value, a definite therapeutic value. It may bring about a reduction of the pressure of the cerebrospinal fluid and thus relieve many of the patient's symptoms, especially those relating to comatose conditions. Usually, where there is high pressure in the spinal canal in adults, at least 50 or 60 c.c. are removed, though as high as 100 c.c. may sometimes be allowed to flow out to advantage. For diagnostic purposes in acute cases five c.c. of cerebrospinal fluid are sufficient. In recent years an improvement on simple lumbar puncture has been the subsequent injection of a certain amount of normal salt solution, with the idea of diluting the toxins present and perhaps even tempting some of those already in spinal cells into solution in the cerebrospinal fluid where they will be less actively harmful. Attempts have even been made to introduce other drugs, lysol and certain milder antiseptics.

Differential Diagnosis.—Whenever the cerebrospinal fluid is cloudy infection is surely present unless the cloudiness is due to hemorrhage; even when the cerebrospinal fluid is clear, if there are fibrinous threads in it, or, if after it has stood for a time, there is a tendency to coagulate into fibrous flakes, an infectious process is at work within the spinal canal. In the examination of cerebrospinal fluid for a diagnostic purpose, it is in this fibrinous material that bacteria and pathological cells are to be looked for. In tuberculous meningitis there is practically always an excess of mononuclear leucocytes. At the beginning of epidemic cerebrospinal meningitis there is always a polynucleosis, that is, a decided increase in the number of polynuclear leucocytes. Later on mononucleosis may develop.

Variety of Micro-organisms.—Nearly all forms of micro-organisms have been found in the cerebrospinal fluid. Even when the affection is of one type there may be a mixed infection of other bacteria besides those specific for the disease. At times there is a spinal meningitis, without any micro-organism, sometimes spoken of as a simple serous meningitis, because no bacteria can be found and there is a very slight tendency to fibrin formation. These cases are sometimes otogenic, that is, due to some infection from pathological process not very virulent in character near the ear. Diplococci are very common in affections of the spinal meninges. Some of them look not unlike gonococci. Gonococci, however, are rather rare. The *Micrococcus catarrhalis* occurs not infrequently. The *Diplococcus intracellularis* of Weichselbaum is thought to be the cause of epidemic cerebrospinal meningitis, and is being seen rather frequently at the present time in cerebrospinal fluid. The differential characteristics between this last organism and the *Micrococcus catarrhalis* are that the micrococcus grows on all media, and on solid media presents a rather tough growth and is quite a long-lived micro-organism. The *Diplococcus intracellularis*, on the other hand, does not grow except under rather favorable circumstances; for instance, the temperature must always be above 20° C. Its growth is of jelly-like consistency on hard media and it is a rather short-lived micro-organism.

Peculiar Disease.—Dr. Joseph E. Winters said that it is hard to speak of the cerebrospinal meningitis epidemic under any one type of disease, since it presents so many anomalies in its course. It may bring the life of a robust, sturdy child to an end in two short hours. It may leave life hovering in impenetrable incertitude

for weeks without hope and without the doctor being able to say anything definite as to the prognosis. Then, suddenly, there may be a beginning of recovery and unconsciousness may depart and complete convalescence ensue, in the midst of which, however, relapse may take place and in a few hours a fatal termination disappoint all hopes. A disease that runs as anomalous a course as thus described can scarcely be brought under a few symptomatic headings. General remarks then are likely to be more suggestive and valuable than formal classifications of symptoms and course. The disease often beggars description and one almost feels as if one were the subject of a bad dream, rather than engaged in the sober consideration of disease.

Illustrative Cases.—A patient seen recently, a child about five years of age, fell on a Saturday evening and hurt its forehead. It awoke early in the morning and asked for a drink. The father noticed that it swallowed peculiarly. A physician was summoned, but the history that the child had suffered from laryngismus stridulus some ten or twelve months before, seemed to account for this symptom. The child did not get better and after two days developed trismus. The diagnosis made then was tetanus. The port of entry for the microorganism was considered to be the injury. The temperature stayed at about 102.5° F. When Dr. Winters was called to see the case the physician was considering the idea of administering tetanus antitoxin, but Dr. Winters hesitated because of the marked involvement of the sensorium. Further study of the case showed that this was the most prominent symptom and that with the exception of the trismus there was no tendency to spasm. The disease was pronounced to be cerebrospinal meningitis, because of the epidemic now raging, and when the little patient died next day the autopsy served to show the correctness of the diagnosis. Before the death, the temperature had risen to 107° F. The length of the disease from the first symptom to the fatal termination was only five days.

Traumatic Infection.—In another patient there was a history of attempts to remove a foreign body from the ear which led to its being pushed through the tympanum. An aurist was consulted who made an incision behind the ear in order to pull the ear forward and by so doing succeeded in removing a pea from behind the remnants of the drum membrane. Eight days later, while eating strawberries and cream, the patient was taken with vomiting and abdominal pain. The temperature rose to 106° F. When Dr. Winters saw the case the most marked symptom was severe tremulousness of both hands, though there was no tremor in the legs. An examination of the spine showed no tenderness in the lower part, but distinct tenderness in the lower dorsal region and extreme tenderness higher up. It is important in these cases to learn to appreciate the reaction of the patient to pain by beginning the examination at a point where no tenderness is expected. When the child was lifted into a sitting posture there was a marked attack of vertigo, which is always a prominent sign, and the disease was set down as cerebrospinal meningitis. In another case, a large healthy girl ate a good breakfast; shortly afterward she was taken with headache and vomiting and in six hours and fifteen minutes from the first symptom was dead.

Pseudo-Appendicitis.—One little patient recently fell ill while on a visit to its grandmother and, of course, the symptoms were attributed to some overindulgence in food, because of grandmother's lax care in the matter. The little one complained of pain first in the left side of the abdomen, but later this pain seemed to become localized in the right side and the affection was considered to be appendicitis. When Dr. Winters was called in consultation there was an ice-bag over the left iliac region and the patient was better. The improvement continued for some time. Then uncontrollable vomiting set in, which was finally brought under the influence of morphine. For several days no food could be taken of any kind, and peptonized milk was given by the rectum. All tenderness left the abdomen after a time and it became very clear that the seat of the symptoms was the nervous system. In the light of knowledge of the present epidemic the affection was finally diagnosed as cerebrospinal meningitis and other confirmatory symptoms were found.

Suspected Poisoning.—In the case of four girls who fell ill at a school along the Hudson, their illness was ascribed to poisoning. The symptoms were very severe and began with vomiting and headache in all of the cases. The only thing that all of them had taken was some Rochelle salts. These were sent to Philadelphia for analysis. Two of the patients died. When called in consultation Dr. Winters was inclined to agree in the diagnosis of poisoning until he noted that the pupil of one of the patients suddenly dilated and then as suddenly contracted. This aroused his suspicion of cerebrospinal meningitis and at the autopsies, for all four of the little patients died, this diagnosis was confirmed.

Symptomatic Course.—As a rule the symptoms of cerebrospinal meningitis epidemica develop very suddenly and not with the slow gradual progress of tuberculous meningitis. The pulse is likely to be exceedingly rapid, while that of tuberculous meningitis is slow and irregular. There is a tremor present in practically every case. Usually there is some stiffness of the neck and also of the muscles of the trunk, but even when this is not present any sudden change of position is sure to be painful, unless the patient is in coma, and to lift the patient's head up always causes extreme vertigo, even in cases that are not severe. Changes of position are followed at once by great increase in the pulse and by tremor. The patient is usually afraid of being moved and skin tenderness to a marked degree is one of the most common features of the disease.

Prognosis.—When the affection has a sudden violent onset the outlook is very unfavorable. Great depression expressed by an extremely sunken countenance also has a bad prognosis. A high temperature or a very rapid pulse early in the case is likely to show a fatal termination. Mottling of the skin is another bad sign and complete involvement of the sensorium is also unfavorable. It must not be forgotten, however, that profound coma may exist for weeks and yet the patient recover completely. Nothing can be said in the meantime, for the patient may never rouse out of the coma, and yet the least favorable symptom may be the beginning of a reasonably rapid convalescence. Sudden contraction and dilatation of the pupils in these cases is likely to portend a fatal termination.

Treatment.—The abstraction of blood by means of leeches applied to the nape of the neck along the spine and to the temples is always followed by relief of symptoms. An ice-cap should always be employed as well as spinal ice-bags; this should not be considered merely expectant treatment, but, besides giving relief to the patient, it shortens the course of the disease, seems to lessen the inflammation and is thus directly curative. One of the most important drugs in this disease is opium. It should be given freely and the patient should be made, as far as possible, free from pain. This point cannot be insisted on too much. The pain itself will help to make the affection fatal, if allowed to persist. After opium the most important drug is the fluid

extract of ergot, which should be given in rather large doses from the beginning to the end of the disease. The most interesting thing about the disease, in Dr. Winter's opinion, is the uniformity of the lesions found at autopsy, and yet the multiplicity of symptoms with the very variously differing onset and course which the affection follows.

Dr. Lee, in opening the discussion, said that the medicolegal aspect of these cases is interesting, since the question of their following injury to the head or to other parts of the body may bring up the question as to responsibility for the fatal termination of the illness that follows what would ordinarily be a rather mild traumatism.

Symptomatic Course.—Dr. Morris Manges said that it must be borne in mind that adults are quite as likely to suffer from cerebrospinal meningitis as children, and that, as a matter of fact, in the present epidemic in New York, a large number of adults have had the disease in severe form and many have died from it. In his experience with these patients at the Mt. Sinai Hospital certain characteristic symptoms have always been noted. Herpes has occurred in every case. Usually it was at the angle of the mouth, but sometimes below the chin, and occurred either early or late in the disease. In severe forms roseola or petechiæ were often seen, and a form of rash that is very interesting and which was described by certain Portuguese observers who have studied a number of cases of the disease recently, is seen with great uniformity about the knees, the trochanters and the elbows. It may be described as a goose-skin appearance, but with the projecting papillæ reddened and irritated-looking, almost as if they had been stripped of their epidermal covering. A deep vermilion color is quite characteristic of some of the lesions of the disease. In mild cases this form of eruption may be helpful in the differentiation of cerebrospinal meningitis.

Eye Symptoms.—Variability of the pupils is an exceedingly valuable sign. A difference in the size is often noted first, and then sudden changes from extreme dilatation to extreme contraction, the pupils not acting synchronously, are often noticed. A deeply congested eye was one of the most uniform external features of the disease at Mt. Sinai Hospital. Strabismus is seldom lacking at some time or other in the disease, and when the patients are conscious double vision may be complained of early. Ecchymoses are seen at times and especially whenever there is a tendency to petechial eruptions elsewhere.

Headache.—One of the very common symptoms is headache, which may mark the beginning of the disease, and is sure to be seriously complained of whenever the patient does not lapse into coma. There is a marked tendency for patients who are not comatose to curl up and flex themselves as much as possible. This gives a series of patients a characteristic look by which the affection is hinted at at once. They are very sensitive to motion and are likely to resent any change of posture.

Differential Diagnosis of Coma.—Where patients go into coma without much warning, as is sometimes the case, it is not always easy to be sure that the affection is not uremic coma. These severe cases are often hemorrhagic, and if hemorrhages occur in the kidneys this may give rise to the thought of hemorrhagic nephritis from the appearance of the urine and so add to the difficulty of the diagnosis. Where sugar occurs in the urine in sudden cases the likeness to diabetic coma becomes very marked. The pressure upon the floor of the fourth ventricle by the rise in pressure of the cerebrospinal fluid may cause, at least temporarily, glycosuria. So during an epidemic this fact must be borne in mind. The differentiation must be made by the pupillary signs and by certain nervous symptoms such as Kernig's and the Babinski phenomena.

Corroboration of Symptoms.—Nervous symptoms are more apt to be present in adults than in children, and lumbar puncture with its high leucocyte exhibit is of great service. The presence of a high leucocytosis in the circulating blood is also important. In a word, the main advance in differential diagnosis has taken place by corroboration of symptoms rather than by the finding of any pathognomonic symptom or set of symptoms. The sudden onset of the disease and its rapidly fatal termination sometimes makes diagnosis impossible. A woman brought into the hospital in coma, the only previous history being the occurrence of vomiting and the gradual sinking into a comatose condition, died within two hours of admission. On the other hand, mild forms of the disease may occur, and during the present epidemic the occurrence of depression with fever from no known cause accompanied by injection of the eyes and absence of the patellar reflexes, must give rise to suspicion.

Lumbar Puncture in Diagnosis.—Where there is grave doubt as to the nature of the disease, lumbar puncture is extremely important. Ten drops of cerebrospinal fluid will give the opportunity for finding the *Meningococcus intracellularis,* and this at once settles the diagnosis. Very few cases have been observed in the present epidemic, in which the meningococcus could not be readily demonstrated. Lumbar puncture is, however, is also curative as well as of diagnostic aid. It is not done often enough. The sudden deaths that are reported in many cases of epidemic cerebrospinal meningitis would not occur with nearly such frequency if timely lumbar puncture were done and the procedure repeated as often as symptoms of coma asserted themselves. It must not be forgotten that the cerebrospinal fluid is apt to accumulate very rapidly. The introduction of certain drugs into the spinal cord sometimes seems to prevent this. One of the most promising of these is lysol. It has been used in Portugal with good results, and seems to have given some satisfaction in the present epidemic. Hot baths are very good in the treatment of cerebrospinal meningitis, and should be given as directed by Aufrecht, at a temperature of about 104° F., with massage, somewhat as in typhoid fever. Patients should not, however, be given cold baths. The skin surface is entirely too sensitive. Baths should not be given either at the beginning of the affection, when the patient is irritable and has a great disinclination to be moved about. As for drug treatment, the most satisfactory remedy is undoubtedly opium, which has an excellent effect and should always be used to save the patients the otherwise intolerable pain of which they complain.

Characteristic Symptoms.—Dr. Leszynsky said that certain symptoms should give rise to suspicion of the possible existence of cerebrospinal meningitis, now that the epidemic is on. Changes in the pupils are the most important, and after these the loss of the knee-jerks. The fever is apt to run very high, and 103° F. is rather low in severe cases of cerebrospinal meningitis. Dr. Leszynsky has employed lysol injections in one case into the spinal canal, removing ten c.c. of fluid and injecting the same amount of one per cent. solution of lysol. The patient suffered from collapse several hours later, but all the symptoms subsided and improvement set in, until convalescence was established. This treatment should not be used in milder cases.

Dr. Palmer Dudley said that lumbar puncture is by no means an easy procedure in the child, though it may be performed without difficulty in older people. It must not be forgotten that in aged people it is quite the rule not to be able to obtain any cerebrospinal fluid on ordinary puncture. There is very little danger from the procedure, however, as Dr. Dudley has employed it in a number of cases for spinal anesthesia.

Spread of the Disease.—Dr. James J. Walsh said that the most interesting problem at the present moment is how cerebrospinal meningitis is spread. We are undoubtedly in the midst of an epidemic of the disease, and any hints in this matter may prove very valuable. In Europe it has often been noticed that sporadic cases of cerebrospinal meningitis occur in tramps or in connection with people who have been living in great uncleanliness, and have moved from one part of the country or city to another. After the disease has thus been introduced into a town, it is not unusual to have several other cases occur in the neighborhood. It would be interesting to know if that special product of our modern civilization, the tramp, had anything to do with the spread of the epidemic in America. It would seem as though uncleanliness cannot be considered to have as much to do with the origin of the disease, as has been thought, since a number of the cases in the present epidemic have occurred among classes of people who are very careful of cleanliness.

Prognosis after Severe Complications.—Dr. Walsh said that too unfavorable a prognosis in severe cases is not always justified. In one case, where coma lasted for several weeks and where, after the disease, the patient was not able to walk well for several years and had a distinct difficulty in speech, all the symptoms disappeared during the course of ten years and practically a complete recovery took place. Only one sign of the disease was left, a slight weakness of the anterior tibial muscles.

Dr. Francis Huber said that cerebrospinal meningitis is an extremely variable disease and hard to diagnose. Lumbar puncture should be performed in doubtful cases, and even in small children from eight to ten c.c. of cerebrospinal fluid should be removed. Less than this had no favorable influence. In one severe case under his observation lumbar puncture was performed fifteen or sixteen times, though before its performance the patient was sometimes so violent as to need restraint. He was now improving. The operation is easy in children.

Dr. Delphey considers that the cerebrospinal meningitis is more atypical in adults even than in children. There may be convulsion, followed by delirium without retraction of the head, without stiffness of the neck and without herpes, with a temperature very little above 100° F. and pulse below 100. In such a case the diagnosis is impossible without lumbar puncture.

Septicemic Cerebrospinal Meningitis.—Dr. Maas said that during the existence of the epidemic it is possible that some cases of cerebrospinal meningitis, due to septicemia, may so closely simulate the epidemic disease as to be mistaken for it. In one case he has seen streptococci recovered from the cerebrospinal fluid and other organs in the body, showing the presence of an acute septicemia after injury.

Dr. Lambert said that in practically all cases at Bellevue the *Meningococcus intracellularis* had been found in the cerebrospinal fluid, and this is the pathognomonic sign. After lysol injections some patients get well and some do not. No treatment seems to be effective.

Dr. Winters, in closing the discussion, said that rashes do not occur commonly in certain epidemics and very seldom in the present epidemic. Lumbar puncture, Dr. Winters considers suitable only for hospital practice, and he says that the diagnosis should be made by careful observation of the patient, even though it should take several hours of noting every symptom, as tenderness, the pupils, the reflexes, the skin, and other available data.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, held May 9, 1904.

The President, T. E. Satterthwaite, M.D., in the Chair.

Discussion on the Treatment of Scarlet Fever.—This was the order of the evening, and the discussion was opened by Dr. S. Henry Dessau. Scarlet fever, he said, was a disease so variable in type at different times and in different countries that up to the present time not only was the prognosis of individual cases difficult, but it was also very difficult to estimate the value of any method of treatment, unless the number of cases treated was very large. Although the disease has always been recognized as highly contagious, until recently the most general method of treatment in vogue has been empirical and expectant. The use of tincture of ferric chloride and potassium chlorate, however, foreshadowed antiseptic treatment. With a view to the lowering of high temperature and the mitigation of the disastrous effects upon the nervous system not infrequently noted in severe cases, Currie introduced hydriatic treatment, and later this was warmly praised by Trousseau. For promoting comfort and giving tone and vigor to the nerve centers, cold affusion will probably always be employed, especially in malignant cases. The cold wet-pack does not have so pronounced an effect, but may serve a useful purpose in certain cases. Hydriatics, inunction of the body, and nasopharyngeal irrigation may be said to be the most valuable adjuncts to treatment up to the present time, while the importance of sanitary measures has also become generally recognized. It would seem that we are now on the eve of a new departure in dealing with this disease. The tendency of modern ideas is to follow in the line of bacteriological research, but it is unfortunate that the specific microorganism of scarlet fever is not yet definitely known. There is good reason to infer, however, that in association with the active element of contagion, a streptococcus, by a concurrent, or as it has been called, *symbiotic,* action, is an important factor in the etiology of complications and sequelæ which are the main causes of mortality. While it has been noted that streptococcus infection renders diphtheria more severe, the evil effects of this symbiosis appear to be ever more marked in scarlet fever. The two methods that are most worthy of consideration at the present time are the serum treatment introduced by Moser of Vienna in 1885, and the antiseptic treatment introduced by Arthur Wigglesworth of Liverpool, England.

Serum Treatment.—The original antistreptococcic serum used in the disease was that of Marmoreck; the one now used, called *new serum,* is that made after the method of Aronson and Moser. It has been largely employed by Baginsky and Moser abroad and to a limited extent by Charlton, of Montreal, Chittick, of Detroit, and Louis Fischer, of New York. In December, 1902, Charlton reported fifteen cases, all severe, with two deaths. In one of the fatal cases the child was in a dying condition on admission and lived but four hours; in the other the child had pneumonia on admission, and five days later, laryngeal diphtheria. In the others the results were marked and of such rapid occurrence that he thought they could be attributed

only to the serum, without the use of which he believed that all would have died. Chittick, November, 1902, reported six cases, and his results were much less favorable, one-half of them proving fatal. Fischer, March, 1903, reported two cases successfully treated in which there were glandular swellings, necrotic exudate, and high temperature. All these observers noted a hastening of desquamation as one of the results. In concluding this portion of the subject, Dr. Dessau gave the conclusions of Mackie as published in the *Lancet* of Feb. 20, 1904, and recently quoted in the *Therapeutic Gazette*. The first and last of these were as follows: (1) Antistreptococcic serum is of distinct value in a certain number of cases, and particularly when the throat lesion is severe and toxaemia is going on; (2) even in those cases in which it does no good there is no evidence to show that it does harm.

Antiseptic Treatment.—Wigglesworth's idea is to administer carbolic acid, in doses of from 1 to 6 grains (according to age), freely diluted, every two hours at the earliest stage of the disease, until the urine becomes smoky, and to continue the acid in diminishing doses until complete convalescence occurs. He began using this treatment over twenty years ago, and in a paper in the *Lancet* of Oct. 23, 1897, claimed that he had had no deaths and only three cases of albuminuria, all transient in character; while there was only one case of glandular suppuration. All other sequelæ were absent. The most interesting feature of his paper is his advocacy and practice of giving carbolic acid (in smaller doses), not only to the scarlet fever patient, but also to the well members of the family, and then allowing the freest communication between the attendants in the sick room and the other inmates of the household. This method, he claims, acts largely as a prophylactic, and in instances where the disease is contracted, it is invariably in a mild form. Wigglesworth contends that in accordance with the investngations of Flugge, and reasoning from analogy, carbolic acid has the antiseptic power of modifying the growth and development of the specific microorganism of the disease, so as to cause an attenuation of its virulence. In concluding his argument he says: "I think, therefore, that I am fully justified in my belief that carbolic acid given in scarlet fever does produce a virus capable of exciting a more benign malady, and, without having absolutely witnessed with the physical eye the attenuation of the scarlet fever bacterium by carbolic acid, I contend that the results I have obtained do by an analogical reasoning justify my assumption that such is produced, and that the bacterium so attenuated is in fact a 'vaccine' endowed with all the beneficial results that accrue from such attenuated cultivations. In full confidence of these results ensuing, I assert that isolation in scarlet fever is both unnecessary and inexpedient." He prefers carbolic acid as the antiseptic remedy because, unlike mineral antiseptics, it has no reaction effects, and, when freely diluted, is positively harmless. Gillespie, of Edinburgh, Dr. Dessau added, has shown that carbolic acid is Nature's own antiseptic in the animal economy, being elaborated in the process of physiological digestion. On account of his own large and favorable personal experience with carbolic acid, he said he was glad to have the opportunity of calling this treatment of scarlet fever anew to the attention of the profession, as the only reference to it which he had found since the original publication was in Bussey's article on scarlet fever in Keating's Encyclopedia of Diseases of Children. It certainly gave one the impression of a simple, safe, rational and ready method of treatment. As to the use of antistreptococcic serum, these two methods, he thought, might well supplement each other, for in one we antagonize the action of the toxin-producing complications, while in the other we inhibit the growth of the specific germs and attenuate their virulence. The same may be said of nasopharyngeal irrigation and hydriatics. Altogether, from the recorded evidence we have at hand, we are encouraged with the hope that we have at last within our means much improved methods of treating such a dreaded and fatal disease as scarlet fever.

Statistics Apt to be Worthless.—Dr. Ransford E. Van Gieson said that on account of the infinite variety of the disease statistics were of little value unless the precise conditions present were stated. It had been his fortune to pass through several epidemics of mild character; also a few of malignant type, where all treatment was futile. Here the disease was accompanied by high temperature and grave cerebral symptoms—delirium at the outset and convulsions and coma at the close. From 1800 to 1804 Graves found in Dublin a great preponderance of malignant cases, many of them terminating within forty-eight hours. From 1804 to 1837 the recurring epidemics were of a mild type.

The Use of Creosotal.—In mild cases of the disease no special remedy is required. Usually when we have put the patient to bed, regulated the diet, and ordered an occasional laxative, we have done all that is called for. In severer cases, however, this is not sufficient. Wigglesworth's record is certainly a remarkable one, extending as it does over twenty years. It is a somewhat extraordinary fact that while we have found germs for a great many diseases, the exanthemata up to the present time have baffled all research in this respect. It is still too early, therefore, to speak with any certainty as to the character of the *cantagium virum* of scarlet fever. Consequently he had taken up the old idea of zymosis as a working hypothesis, for want of a better one. He had concluded this disease to be due to a degenerated enzyme, or pernicious zymogen, as the vehicle of contagion, and had always used some remedy having antizymotic power. He began early to employ sulphite of soda. He was ever ready to accept any kind of antifermentative treatment, as closely related to the bacterial aspects of the matter, and later he was accustomed to give carbolic acid in five or six drop doses. Among the ignorant particularly, however, he found it difficult to get people to use this remedy, as it was known to be a popular means of suicide. Accordingly he took up creosotal as a substitute for it, and he had obtained just as good results with this agent. It was analogous to carbolic acid in its action and, so far as he had been able to judge, produced the same effect. The urine did not become so smoky under its use as with carbolic acid, and it could be given in much larger doses. One of the most pronounced results produced by it was a rapid fall in temperature. As a diluent for the creosotal he gave liquor ammoniæ acetatis, and he believed that this had a tendency to prevent renal complications. He had had no experience with antistreptococcic serum, but, judging from the success of the use of allotropic silver in erysipelas, he thought it might prove of value.

The Treatment of Desquamation.—He could not agree with Wigglesworth on some points. He should hesitate to say that a diminished virulence could be produced by carbolic acid or similar agents. He believed, moreover, in the strictest isolation, and the disinfection of the patient himself, externally as well as internally. One of the most potent agencies for disseminating scarlet fever was the fine particles of desquamating skin. The best means to prevent this was thorough and constant inunction of the body. Personally he was accustomed to employ for this purpose a mixture

of ten tablespoonfuls of sulphur and twice as much lard, to which were added an ounce of sodium bicarbonate and half a fluid ounce of oil of eucalyptus. He could truthfully say that he had never known an instance in which the disease was contracted from a patient, properly isolated, in whose case such inunction was faithfully carried out.

Anginose Symptoms.—The throat symptoms naturally presented different varieties, and in malignant cases necrosis commenced almost immediately. In every case, however mild, he began local treatment with the following formula:

℞ Borax..... ℥i.
Sodium bicarbonate..... ℥ii.
Potassium chlorate..... gr. xv.
Potassium permanganate..... gr. vi.

Half a tablespoonful of this to half a cupful of water was employed as a gargle or wash for the nose and throat.

The Use of Diphtheria Antitoxin.—Dr. Thomas Darlington said that in his experience it seemed to make very little difference what treatment was employed. He had formerly made trial of Déclat's carbolic acid treatment, but had not been impressed with its value. At the present time he was accustomed to begin the treatment of all his hospital cases with large doses of diphtheria antitoxin, with a view to preventing diphtheritic complications, and he had never seen any harm from this practice. Scarlet fever patients, about the fourth or fifth day, are apt to have some diarrhea, and for this he formerly gave creosote, in liquid peptonoids or other pleasant vehicle. He had found, however, that much the best plan was to give a little calomel at the beginning of the attack, as by this means such digestive trouble could usually be avoided. The great majority of deaths occur late in the disease, and the greatest danger from sequelæ is in the light cases, because, the children having the disease so mildly, the parents do not take proper care of them. As to the use of antistreptococcic serum, he had had no experience. Dr. William N. Park was at the present time engaged in an investigation of this treatment at the Willard Parker Hospital, and it was to be hoped that some reliable data might be obtained from his researches. In conclusion, Dr. Darlington stated that the Health Department had just had prepared for the St. Louis Exposition a series of charts showing the death-rate in New York from the prominent contagious diseases during the last twenty years. In these it was interesting to note that the death-rate fell very much as soon as isolation was insisted upon.

General Symptomatic Treatment.—Dr. Walter Lester Carr said that in epidemics in which the disease was of a grave type treatment was of little benefit. He had not found carbolic acid a specific, although in small doses it was useful in relieving vomiting and also diarrhea. It was also an excellent remedy when throat complications were present, and creosotal probably acted in much the same way. Inunction was undoubtedly a very valuable measure, as Dr. Van Gieson had stated. Siebert was accustomed to use ichthyol for this purpose. Personally he never hesitated to employ sponging while maintaining inunction. The varying character of different epidemics had been clearly brought out in the discussion, and, with our present knowledge, general care and the prompt treatment of symptoms as they arose, seemed to offer the best chances of success.

No Specific as Yet.—Dr. Thomas S. Southworth said there was probably no specific for scarlet fever. He thought there was no other disease in which there was so much meddlesome interference and so much in the way of proper treatment that was omitted, as in this. What was omitted might no doubt often prevent the occurrence of fatal complications. Our main object, indeed, was the avoidance of complications. There was great need of good nursing, and the proper care of the child could scarcely be carried out by the mother alone. Thus, the maintenance of nasal irrigation almost necessarily required the services of a competent nurse. There were three things which especially demanded attention: (1) The kidneys, (2) the ears, and (3) suppuration of the cervical glands.

Attention to the Kidneys.—An abundant supply of fluid was required to thoroughly wash out the kidneys. At the Minturn Hospital it was the practice to give a considerable amount of milk and of water alternately every two hours, and a large flow of urine was thus induced. Under this plan the number of cases of nephritis was very small. Kidney trouble was undoubtedly much less of a bugbear at present than in the old days when water was to a great extent denied the patient. Frequent saline enemata were also of great service from their diuretic action. He agreed with Dr. Van Gieson as to the practical value of remedies like liquor ammoniæ acetatis, which had a diaphoretic as well as a diuretic effect.

The Nose and Throat.—In every case of scarlet fever he thought a culture should be taken from the throat, in order to ascertain whether any Klebs-Loeffler bacilli were present. In all institutions it was a good practice to administer diphtheria antitoxin at the inception of the case, as Dr. Darlington had advocated, because in all these places the diphtheria germ was endemic. There was not the slightest danger from this procedure, particularly if the kidneys were kept flushed. Nasal irrigations were most important, in that they were irrigations of the nasopharynx. It was his routine practice to employ saline irrigations every four hours in all his cases of scarlet fever. The fluid, if some of it should be swallowed, was perfectly harmless. This measure, he believed, prevented an immense amount of toxic infection. Thus, it limited the extension of trouble through the eustachian tube to the middle ear.

The Use of Antistreptococcic Serum Unphilosophical.—Dr. Henry W. Berg said there had for some time been a universal desire to secure a serum that would successfully combat scarlet fever. The first available antistreptococcic serum was that of Marmoreck. It was tried here in twenty or thirty cases and then given up, as the results from it were extremely disappointing. As to the death-rate, Dr. Berg attached very little importance to this. Some years later came the Aronson antistreptococcic serum, which was far more powerful. In Aronson's own cases the death-rate was about 8 per cent., a figure by no means as favorable as is generally met with in this country under ordinary methods. Then came the Moser serum, which was more powerful still. In all these we have been dealing with a serum having an action not against the germ of the disease, but against the germ which causes the complications of the disease. What should we naturally expect from a serum which counteracts the germ of the disease itself? Undoubtedly, that under its use there should be some reduction of temperature within twenty-four or at most forty-eight hours. If such a fall occurred, we would be willing to accept it as a specific. Now, as an actual fact it is observed that under the use of antistreptococcic serum there is a decline of temperature about the sixth day of the disease. When it is considered that in the ordinary history of scarlet fever, without any treatment, the febrile movement terminates by lysis on the fifth or sixth day, it will readily be seen that this serum has absolutely no claim to be considered as a specific. It is a delusion, therefore, to suppose that antistreptococcic serum is useful in scarlet fever.

Negative Results from Antistreptococcic Serum at the Willard Parker Hospital.—The Secretary, Dr. P. Brynberg Porter, said it had been hoped to have Dr. Park present on this occasion to give some report of his recent investigations at the Willard Parker Hospital; but, unfortunately, he was away from the city. Dr. Park had, however, informed him verbally that the results from antistreptococcic serum in a dozen cases of scarlet fever had proved entirely negative. The most he could say was, that while it had not been of benefit, it had apparently done no harm.

Carbolic Acid.—Dr. Dessau closed the discussion. In regard to the difficulty of getting people to use carbolic acid on account of the prejudice against the remedy as a poison, as mentioned by Dr. Van Gieson, he said that in a large dispensary practice, in which he constantly prescribed it, he had had no trouble on this score. It was his custom to inform mothers, not that the medicine was carbolic acid, but that it had some carbolic acid in it, and that in the diluted way in which the acid was given it was absolutely harmless. The only idiosyncrasy against the remedy which he had noted was that in a few individuals it caused vomiting. This difficulty, however, could usually be overcome if its administration were persisted in for a time. Dr. Darlington had spoken somewhat disparagingly of Déclat's treatment of scarlet fever. But this treatment, in which phenol was given by hypodermatic injection, was an entirely different matter from the Wigglesworth carbolic acid treatment. It was true that we did sometimes use carbolic acid subcutaneously in the treatment of phlegmons, such as boils and carbuncles, but the dose was never a large one—not more than 10 drops of a 10 per cent. solution. Wigglesworth, on the other hand, gave as much carbolic acid by the mouth as his patients could take.

Diphtheria Antitoxin in Scarlet Fever.—In regard to Dr. Darlington's routine practice of administering diphtheria antitoxin at the beginning of all cases of scarlet fever, it was interesting to note that in Chittick's two most successful cases the patients had given them, some time after getting the antistreptococcic serum, 2,500 units of diphtheria antitoxin, although no Klebs-Loeffler bacilli were found. On the other hand, two cases in which the antitoxin was given first, and later free doses of antistreptococcic serum, did badly; one of them dying, and the other recovering only after a month's illness.

HARVARD MEDICAL SOCIETY OF NEW YORK.

Regular Monthly Meeting, held Saturday, April 23, 1904.

The Vice-President, Eugene Fuller, M.D., in the Chair.

Modern Therapeutics.—This was the title of the paper of the evening and was read by Dr. Reynold Webb Wilcox. He said that many important advances in modern therapeutics have been made with regard to physical and mechanical methods of treating disease. These are no longer used empirically, as had been the case for so long, when their employment was rather in the hands of the quack and the charlatan, than of the regular practitioner, but are now employed on definite scientific principles. Some of the changes in the rationale of their use are extremely interesting and represent distinct landmarks in the progress of therapeutics. The cold bath, for instance, is no longer used with the idea that it reduces fever, or as a general nervous stimulant, but it is rather employed for the purpose of eliminating various toxins through the kidneys.

Climate and Mineral Springs.—Dr. Wilcox said that there has come a complete realization that there cannot be an ideal climate, since the first necessity would be equability of temperature, and this cannot exist without a dampness that is eminently unsatisfactory. The climate must not be too dry, however, for it has been learned that large and rapid daily changes of temperature must of necessity follow. With regard to mineral springs and the effect of mineral waters, modern medicine is in a much better position to know the chemical composition of these waters and what can be looked for from them and what not. Besides the chemistry of mineral waters, there has come a great advance in our knowledge of the physical chemistry of such solutions and the study of various radio-activities as are associated with mineral waters is opening up another and probably a brilliant chapter in internal hydrotherapeutics.

Electricity.—This is no longer looked upon as a cure-all, but definite indications for its employment are well recognized. The very high tension electricity, as developed by Dr. Morton in this country, and the use of high frequency currents, have made electrotherapeutics a much more important chapter and with a much more rational basis than before. The effect of electricity upon the blood vessels and the consequent stimulating effect of variations in blood pressure are now well known and show the lines in which this department is going to develop. Static electricity is no longer used merely empirically, but has a definite set of indications and can be made in proper conditions and with appropriate direction to give definite results.

Pure Drug Therapeutics.—Drug therapeutics has lagged somewhat behind physical and mechanical therapeutics as regards its establishment upon a firm rational basis. There is no doubt now that the new physical chemistry, the most brilliant chapter in chemical development at the end of the nineteenth century, will soon remedy most of this defect. Already this has been accomplished for familiar drugs and the end is not yet. At the beginning of the nineteenth century the use of all drugs was based upon empiricism. As the result of German nihilism, unfortunately there was for a time, in scientific hands, a neglect of drugs that kept therapeutics in the background, while pathology and other departments of medical science were advancing with giant strides. Even at the present time many so-called text-books of medicine are scarcely more than treatises on pure pathology. With regard to treatment very little is said. So much is this division of the book overshadowed by the rest that often it occupies brief paragraphs where the others have pages devoted to them. This is, of course, as it should be, since a text-book of medicine must be helpful not alone in the recognition of disease, but especially for its cure, as far as that is possible and for its care if cure cannot be obtained.

Physical Chemistry of Drug Treatment.—If drug treatment is to be successful in modern days and if its true rationale is to be recognized, then the basis of the explanation of drug effects must be along the lines of physical chemistry. It must not be forgotten that at various times varying explanations for the action of a drug may be offered and accepted, and yet the truth as to its real therapeutic effect not be known until the real cause of the disease has been recognized. Until Laveran discovered the cause of malaria, it was impossible ever for therapeutists to give the true reason for the action of quinine in the disease. Much had been said about its supposed effect on fever, of its effect on the white blood cells, it was when it had been found that it acted unfavorably upon the *Plasmodium malariæ* that the real explanation became evident. The empir-

ical fact of the usefulness of quinine was unsatiable. The explanations offered for its effect, however, were many and had to be changed with the progress of science until at last truth came.

Basis of Drug Therapy.—Drug therapy is now being put on a much more secure basis, by observations in the laboratory. This does not change the views with regard to the employment of remedies, but often helps to make it clear how they may be used with better effect. Digitalis is now used on a very different theory from that on which it was originally introduced, but the indications for its employment are the same as when Withering first wrote with regard to it in 1784. The most hopeful thing with regard to present-day drug therapeutics lies in the development of physical chemistry. It is but a few years since Faraday introduced the word ion and the idea which it conveys. Only now is the pregnant idea of his coming to bear fruit in a new science of chemistry. In the days when Lister recommended carbolic acid as the most important thing for securing asepsis, generally the material was employed in varied solution. However, by experiment and observation it came to be known that in oily solution carbolic acid did not inhibit bacterial growth. It was not until the application of Faraday's theory to chemical compounds brought out the fact that electrolytes are not set free when in oily solution that the real explanation for this failure of carbolic acid, under these circumstances, could be understood. The same explanation has been found to be helpful with regard to solutions of mercury, and even with regard to many biological phenomena where it might be least expected to have its application. The formation of rouleaux in the blood, that is, the clinging together in series of the red blood corpuscles, is really a phenomenon of ionization. The Widal reaction receives its best explanation on the ionic theory. The action of toxin and antitoxin on one another are phenomena of ionization. These phenomena can now be measured with exactness by the Wheatstone bridge, as was demonstrated at our last meeting, and Kohlrausch has determined the conductivity of fluids with reference to their contained electrical units. There are practical applications of these theories, as for instance the pleuritic fluids and their possible absorption and to the urinary contents that look very promising.

Pharmacopœia.—While the profession in America had an excellent pharmacopœia for use, one that is generally considered more valuable than that of any other nation, not even excepting the German, very few physicians have been sufficiently familiar with it. One hundred and fifty professors of therapeutics were asked why they thought the pharmacopœia was not more used in this country. Over thirty of them answered that they considered the main reason for the neglect of the pharmacopœia by the medical profession was its unwieldy size. It is evident that even these professors of therapeutics made the mistake of taking the United States Dispensary for the pharmacopœia. If such is the case, Dr. Wilcox ventures to say that a very large proportion of the practising physicians of this country do not know the pharmacopœia because they have been deterred by the supposition of its size, while it is really only a comparatively small book, yet contains, well arranged, some of the most indispensable information a physician can have who is intent on prescribing rationally without the supposed aid thrust upon him by overzealous manufacturing chemists.

Pharmacopœial Development.—The United States Pharmacopœia was first formally issued in 1817, when it was decided that some legal standard was required for drugs and drug preparations. Until 1840 it continued to be published in Latin and English, but since then has been published only in English. Physicians would find that it contained nearly everything they needed to prescribe, and many helpful suggestions. Every ten years, as the result of invitations to medical schools and various medical and pharmaceutical societies, a committee of revision was selected, consisting of twenty-five members, who see to the elimination of drugs that are no longer used and to the introduction of remedial materials of various kinds, than have been introduced to medicine during the preceding decade. The book thus made is the legal standard, and is adopted by the Custom House, the Army and the Navy, as well as most of the States, as the place of last appeal for formal and legal information with regard to drugs. The next edition, which is to be issued within a few weeks, will contain besides the other information the dosage of the various drugs and remedies that are incorporated in the pharmacopœia.

Students and Drug Therapeutics.—At a recent discussion of the American Therapeutic Society the question was asked why medical students do not know more about therapeutics, since, as a rule, most of them are anxious to learn what to do for disease and yet are graduated, without practical training in the use of remedial agents. In the course of the discussion it was brought out that there is too much teaching of the theory of treatment and too little demonstration of the practical work of drugs either on animals or on patients. Medical students must have definite courses in the action of drugs, as these can be exhibited on animals, and then may be introduced to the classification of drugs with the idea of widening their knowledge as well as of suggesting the grouping of materials related to those whose action they have seen. Then the medical profession in this country will escape the opprobrium of Dr. Holmes's satire, that they sometimes use drugs of which they know nothing for diseases of which they know less. His other expression, used more in jest than in earnest, perhaps, that 'twould have been better for men, though worse for fishes, if all the drugs jest than in earnest, perhaps, that 'twould have been bettion.

Simplicity of Therapy.—Dr. Charles G. Schram said, in discussing the paper, that the keynote of therapeutics must be simplicity in the use of remedies. The day of complicated methods of cure is over. One remedy is used for its definite effect rather than a gunshot prescription with the idea that something in it will touch the right spot and help the patient regardless of the effect of the rest of the drugs in the mixture. The striking expression of the distinguished professor of cutaneous diseases at Harvard who said, "use vaseline if you do not know the ointment that you want to use exactly, but do not prescribe an ointment on general principles. Use lime water, if you do not know what you consider to be the proper lotion that you should employ, instead of prescribing something of whose effect you are not sure. The human organism is very delicately balanced and drugs misapplied easily do damage. The first rule must always be *non nocere*, not to do any harm. The next must be to treat the individual, and not the affection with which he is suffering.

Teaching of Therapeutics.—Dr. A. B. Duel said, in continuing the discussion, that the teaching of therapeutics a few years ago, even in good medical colleges, was apt to be rather farcical. The professor did a good deal of reading of facts and dry lecturing with regard to drug actions until the student finally got hold of a compend, boned the matter up and passed his examination. With regard to clinical application of drugs, so little was said that the student carried away next to nothing. The professor of clinical medicine spent nine-tenths of his time in the discussion of diag-

nosis and etiology and of pathology, and said only a few brief hurried words with regard to treatment at the end. Some men who got hospital work were given a training at the hands of distinguished clinical observers, but found that their use of drugs was entirely empiric and had very little reference to the scientific drug actions, as stated by the specialist in therapeutics. At the present time a change has come over that sort of teaching. But the medical student of to-day is eminently to be pitied. He is in the midst of three fires. There is the laboratory man who wants most of his time; the professor of clinical medicine, who wants him at the bedside for many hours a day; finally, there is the specialist who considers that the only hope for practical medicine is in the devotion of more time to the specialties.

Diagnosis Versus Therapy.—Dr. Edward Foote said that the science of diagnosis was definite and sure, yet difficult and required the most careful teaching from the very beginning, if its practice were to become the routine necessary for the successful practice of rational medicine. Rightly, then, the medical schools insisted so much more on diagnosis than on treatment. Treatment is much more uncertain, varies to a certain extent from year to year, can be learned from books, as diagnosis cannot, and consequently can be neglected with more impunity, or, at least, have less time devoted to it with smaller danger to ultimate success of the practitioner of medicine.

Formularies.—Dr. Henry Spooner said that medical students are told much about drug actions, but are apt to know little or nothing about the look of drugs or the combinations of them. Hence the tendency to secure formularies and make selection of prescription. In those whose tendency is not in this line, the ready-made formulas of the manufacturing drug houses make an easy and facile resort which cannot, however, but prove serious for the practice of medicine.

Dr. Whitman said that as a graduate in medicine he had scarcely the faintest notion of practical therapeutics, and one of his earliest hospital reminiscences impressed upon him as a memorial of drug action, was the effect of various cathartic remedies. The hope of drug therapeutics, however, seemed to his mind to consist in the gradual evolution of the mechanics of drug therapy, so that their use will be established on a firm rationale.

Dr. Fuller said that students should be taught the simple effects of a few drugs, and these of course the important ones. The attempt to crowd into their brains all therapeutic knowledge inevitably swamped them with undigested information, and they had to begin for themselves by learning the action of a few drugs. Dr. Fuller believes that drug houses should be made responsible for what they put upon the market, and for the alluring advertisements, often without any basis in truth, by which they attempt to bring about the introduction of their remedies. Professors of therapeutics should impress the young practitioner, about to begin his career, with the fact that most of these much-advertised remedies are without any proper efficaciousness. Personally, Dr. Fuller has never used any of the new remedies until they have been at least five years before the public. Then time and the experience of the many, has usually sifted out those that are helpful and eliminated the useless preparations. It is interesting, however, to realize that Doctors are ever avid for ready-made prescriptions. At the Post-Graduate the announcement of a prescription is always followed by the appearance of note-books and the waking up of students in order to take it down. They are all evidently interested in getting at the details of practical medicine, but they cannot trust to their memory for the indications for drugs, making combinations for themselves, but prefer definite formulas. This is evidently a manifestation of the same spirit that leads them to take up with the various ready-made prescriptions offered by the drug houses.

Dr. Follen Cabot said that at least physicians who have graduated should know what substances are incompatible in prescriptions. This should be true not only for the chemical incompatibilities, which, if they are serious, the druggist will usually correct or at least ask about, but especially with regard to the therapeutic incompatibilities. How often does it not happen that in a prescription in which a number of ingredients occur some of the materials have directly opposite physiological action to that of others or at least tend to modify and neutralize such action. This, of course, nullifies the value of the prescription.

Number of Drugs.—Dr. Wilcox, in closing the discussion, said that there is much more in the practice of therapeutics than the mere administration of drugs, though this seems to fill so large a space in the minds of many medical practitioners as almost to exclude other and extremely important therapeutic measures. Old customs in medicine seem to counsel not only many drugs, but very frequent administration. He remembers distinctly in hospital treatment seeing one medicine given before and another after meals, regularly three times a day, with a sleeping draught at night and a laxative potion in the morning. Altogether the patient looked to eight different times at which health-giving medicine was to be administered. Undoubtedly this had a good suggestive effect, whenever it was not undone by the action of the medicine. At the present time, however, the tendency is very fortunately toward simplicity of remedies and much less frequency of administration.

Therapeutic Successes.—Those who are discouraged with regard to therapeutics should remember some of the facts and statistics of present-day treatment. Formerly 75 per cent of patients attacked by laryngeal diphtheria died. Now between serum and intubation 75 per cent. recover. The former death rate from typhoid fever in hospital treatment was eighteen per cent. Now the mortality is not more than two per cent. As the result of the use of quinine 95 per cent. of the cases of amebic dysentery recover, though formerly this was a very fatal and persistent disease. For rheumatism Sydenham said the only treatment was six weeks and flannel. About a century ago Cullen said the only thing for rheumatism was six weeks and patience. Now with proper use of the salicylates the disease usually does not last more than six days. Without minimizing diagnosis, pathology, or etiology, it is easy to understand that treatment is more important than any of them. Diagnosis is much easier than intelligent therapy. There are certain improvements in the teaching of therapeutics, however, that should be introduced and with the present spread of laboratories and the tendency to include demonstrations in all courses in medical schools actual contact with drugs, remedial agencies and experience with their effects on animals is much more common than might be thought by those who graduated twenty years ago.

Validol in Seasickness.—K. Koepke (*Therap. Monatshft,* June, 1904) believes he has discovered a specific against seasickness in validol. The patient receives ten to fifteen drops on sugar and is instructed to lie down; in almost every case the vertigo and nausea disappear and small amounts of food can be retained. If the theory that seasickness is caused by cerebral anemia is correct, validol probably acts by raising the intracranial blood-pressure.

BRITISH MEDICAL ASSOCIATION.[1]

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

(Continued from Page 327.)

Army and Navy Service.—The president of this section, Surgeon-General Bradshaw, made a few appropriate introductory remarks commenting on the great importance of the hints that meetings of this kind give to the profession and also of the striking benefit to the soldier and sailor as a result of these conferences.

Camp Sanitation.—Major C. E. Freeman said that the sanitation of camps is a subject of vital importance to all, whether representing the navy, army, or volunteers. Camps in war time fall into two divisions: temporary and standing camps. The tendency nowadays is to replace temporary camps—that is, those occupied for twenty-four to forty-eight hours only—by bivouacs, doing away with tents altogether when on the march. As far as experience goes, at any rate in South Africa, the results of this procedure were good. The men seemed to get quickly hardened to the open-air life, while the relief to the transport was, of course, enormous. With the increased celerity of movement demanded by modern tactics on the march, the bivouac will in future always replace the camp. All that can be done in these hasty encampments and bivouacs is to apply the due principles of camp sanitation as far as time and means at disposal will permit. Owing to the shortness of the halt there is no great likelihood of infection arising, and if steps be taken to keep the source of the water supply clean, to prevent the actual ground occupied by the troops from being fouled, to dig a latrine trench and rubbish pit in a suitable position, and to cover in the trench and set fire to the rubbish on departing next day—that is as much as he can accomplish. If other troops following after occupy the same ground, danger arises, and great stress should be laid on the importance of using fresh sites wherever possible to encamp on. The principles of camp sanitation find their chief application in the standing camps, which are a necessary and important feature of every campaign. It is here that sickness and epidemic disease usually break out—seldom among troops who are on the march. Looking broadly at the problem these camps are congested areas, often with populations of 20,000 to 30,000 inhabitants, and having a minimum density of population in the infantry regiments of 226 men to an acre, which is greater than that of the most crowded part of Whitechapel (Notter and Firth). This crowded community has a ready-made water supply, drainage system, abattoirs, or scavenging arrangements. The inhabitants are crowded in their tents to an extent never met with in civil life, and have but small facilities for personal cleanliness. They are often worn out by fatigue and privations, or wearied by home sickness and the deadly monotony of military routine. It is to be wondered that when infectious disease breaks out in these circumstances it tends to spread like wildfire. Owing to the complexity of the problem the precautions called for must be somewhat elaborate, and it will be best to touch lightly on each point in succession, speaking in more detail on the questions which are the chief subject of this paper.

Tents.—There is nothing to be said in favor of the bell tent, and a ridge-pole tent is now being introduced which seems better in every way. A similar form of tent has been adopted in India. It is needless here to expatiate on the evils of overcrowding in the tents, and on the advantage of disposing the camp as widely as possible. Animals in camp should be picketed as far from the tents as circumstances will permit, as they of necessity foul the ground and attract flies. The usual arrangement with cavalry, artillery, etc., of having the horse lines in the center of the camp may be necessary for military exigencies, but it is bad sanitation.

Water Supply.—This is a burning question. The important point is to secure if possible a decent source of supply, and to take every care to keep it uncontaminated. This is far better than taking water at haphazard—very possibly with a dead camel or horse lying by—and trusting to boiling or filtration afterwards; for the more the water is handled the more likely it is to be infected, and the dirtier it becomes, while great care and supervision are required in its storage. Therefore a resort to boiling or filtration unless certain that the water was impure is not advisable. To this rule, however, one exception should be made. Cholera is so greatly a waterbone disease, that if an outbreak of it were dreaded, as a precaution all the drinking water should be boiled or filtered. Of these two modes one would recommend boiling, as the Pasteur or Berkefeld filters are rather delicate mechanisms to handle in the field. Boiled water as weak tea would soon become a fairly popular beverage.

In a standing camp a system of elevated cisterns can often be improvised, thus doing away with the frequent movements of water carts, and ensuring the maximum protection to the water.

Food.—The question of rations does not concern us here, but the field kitchens do, and much care is required to keep them clean and so to prevent a plague of flies. The great point is to teach the cooks to put all the fragments of food, etc., into empty tins, and not to throw everything on the ground and trust to sweeping it up afterward. If this is allowed, the ground quickly becomes foul and a center of attraction for flies. All organic rubbish must of course be burnt in the kitchen fires. There is a curious tendency in camps, which we have to fight against, to put the kitchens and latrines close together. The medical officer must see that they are kept as far from each other as possible, otherwise flies of course pass from one to the other and the food is infected.

Latrines.—These are the crux of camp sanitation, especially when viewed in the light of recent discoveries as to the rôle played by flies in the spread of disease. In standing camps latrines are of two patterns, either the trench or the pail system. The latter is much to be preferred, as trenches rapidly get filled up and fresh ones have to be dug, thus continually extending the danger area; while under the pail system the excreta are removed away from the camp altogether. This pail system can, of course, only be carried out in favorable circumstances and in camps of a fairly permanent nature. The buckets must be in good order and sufficient in number. The soil carts must be efficient and perfectly watertight, and the pits where the excreta are disposed of must be situated well away from the camp, and the water supply must be dug not too deep or too large, and be regularly filled in daily. An adequate staff of scavengers must be provided, and careful and regular supervision of all these details by a medical officer will be required. Unless all these requirements can be complied with the pail system is better not attempted, as the buckets will be foul, sewage will be dropped about the camp and the night-soil pits will become a filthy morass. If fresh chloride of lime is available, some may be thrown into the trench with the dry earth.

1 From advance sheets of the *British Medical Journal*, by courtesy of the editor.

It has bactericidal properties and its odor discourages flies. Lime is useless, as are all disinfectant powders. Pioneers must be detailed to take charge of the latrines, otherwise the trenches and their surroundings speedily become foul in the last degree. Screens must be improvised, not only for decency but also to prevent wind and dust storms blowing the dried excreta, etc., about the camp—a common and obvious source of infection in India and South Africa.

Sanitation in Volunteer Camps and the Disposal of Refuse and Excreta.—Surgeon-Lieutenant-Colonel P. B. Giles said that a powerful factor against efficient sanitation in volunteer camps is that the general system of laying out the camp is left to the quartermaster and adjutant and to the entire exclusion of the medical officer, and so frequently the best sanitation is not secured. It is quite true that volunteer camps are only intended to be used for a short period by the various units camping; but as it so frequently happens favorite localities are used year after year more or less all the summer, and so get foul, and because the purpose of camping is to give practical instruction, it has always seemed to me that as the dangers of camp life to a great extent are the diseases that are preventable, the proper course would be to start with all the precautions that should be observed if the conditions were actual service against a foe.

First, he considers that any attempts to restrict and curtail the area of a camp are risky; cramping the area of a camp may not under other favorable conditions at once show anything unhealthy, but experience goes to amply prove that in all localities in which camps are formed, and continued, that certain diseases will sooner or later occur, generally in the inverse ratio of the period over which the ground is occupied, and therefore all attempts to curtail the area of a camp and so concentrate humanity will result in sickness. Secondly, that the illnesses peculiar to camp are *de facto* such as are common to those who live in crowded and ill-ventilated localities—namely, diarrhea, sore throat, rheumatism, conjunctivitis, pneumonia, dysentery, simple continued fever, enteric. Thirdly, that the best way to prevent these diseases of camp is to obtain the best ventilation, cleanliness, disposal of refuse, disposal of excreta.

Bell tents he considers very unsanitary. The new double tent has its drawbacks, in that it lessens the germicidal activities of the sun's rays. He is not in favor of the water bottle. It is difficult to keep clean. Is more frequently used for beer. Becomes infected readily, and is not conducive to that all-important feature of military life—thirst control. Earth pail latrines he thinks better than trenches. All refuse should be burned.

Naval Dietary.—Staff Surgeon J. Falconer Hall said that the new scale of dietary came into force October 1, 1903, and since then one has had time to form an opinion regarding it. In discussing the question of naval dietary one has always to remember that compensation (or savings, as it is called) is allowed for certain articles of food that are not taken up, and much of this money is spent in the ship's canteen on various other foodstuffs. A short review of the different articles of diet is here given:

Soft Bread.—This is supplied at all the home ports, as well as most of the ports abroad, and is of a very good quality, though now and then, especially abroad, an increase in the amount of crust would be an improvement; two-thirds of the bread must be taken up.

Biscuit.—This ration is issued when the ship is at sea. It is a very popular ration, and from its composition it will be seen that its nutritious value is very high.

Fresh Meat.—The meat supplied to the service is of very good quality, being especially so at home ports. Where fresh mutton can be procured at a reasonable price, it may be issued as a change, if the men desire it. In any case, two-thirds of this ration must be taken up.

Fresh Vegetables.—The vegetables may consist entirely of one kind, or of various kinds. At home ports, potatoes are very often supplied, with frequent changes to fresh green vegetables. Abroad, the fresh vegetables issued depend almost entirely on the part of the world where the ship may be. This ration is only issued with fresh meat. In most ships potatoes are part of the canteen stock, where they can be purchased by the men.

Spirit.—An ⅛ pint of rum is issued to warrant officers and men over the age of 20. This is served out immediately after dinner. Savings may be taken for this ration, or the following substitutes: (1) ¼ oz. tea, ½ oz. soluble chocolate, and 1¼ oz. sugar; (2) ¼ oz. tea and 2¾ oz. sugar, or (3) ¾ oz. soluble chocolate, and 2 oz. sugar. The Admiralty also allow ½ a pint of wine, or 1 pint of porter, as the equivalent of the ⅛ pint of rum. Porter is usually only issued in ships on the West Coast of Africa.

Jam.—The jams supplied consist of the following descriptions, namely, strawberry, black currant, apricot, plum, gooseberry, and orange marmalade. Marmalade is issued at least on two days a week; the other days of the week the men have their choice, but only one variety is issued on any one day. In the ship one is in at present very little of the jam is taken up; but one is quite sure that in a foreign station all of it would be taken up.

Condensed Milk.—This is of the unsweetened description. No savings are allowed for this article; this is a very good thing, as it can be used for tea, or to make puddings, etc.

Compressed Vegetables.—These consist of several kinds, namely, mixed vegetables, haricot beans, shredded beans, cabbage, carrots, onions, sliced potatoes, and spinach. These are to be issued as far as possible in the varieties that the men like. The following rules have been framed for the cooking of these vegetables. The vegetables are to be placed in a small meshed net and taken to the cook the night before, who will soak them properly in hot water; this is a most important point, and the water should be changed several times during the process. The next morning the vegetables will be steamed by being placed on special gratings fitted to the coppers.

Preserved Potato.—This ration has been done away with, and a very good thing, as it was never palatable, and could really only be used for thickening soups.

Tea, Cocoa and Coffee.—The new scale provides for one ration of cocoa, one of coffee, and two of tea. At present very little coffee is taken up; this will no doubt increase as the men get to know how to make it properly. At present tea is the most popular beverage; it is now issued to each mess, and the men can make it as required. Cocoa is always issued the first thing in the morning; the men are very fond of this ration.

Preserved Meat.—This ration, for dinner or supper, consists of corned beef, boiled beef, or boiled mutton. This is issued in the kinds preferred by the men as far as possible. Corned beef as a rule is the favorite.

Salt Pork.—This is a very popular ration, and all the issue is usually taken up.

Salt Beef is of a very good quality, but is not so much liked as the pork.

None of the other articles of dietary require any special notice.

(To be Continued.)

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ORIGINAL ARTICLES.

DELIRIUM FROM NERVOUS SHOCK.[1]

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UNDER the term delirium are included mental states characterized by psychomotor unrest, insomnia, clouding of consciousness, incoherence of speech, to which may or may not be added hallucinations, illusions, and unsystematized delusions. Delirium owns many causes. As a temporary complication of febriculæ, at the height of the fever, it is hardly considered a disease. Occurring later in the course of certain infections, notably typhoid fever, pneumonia, influenza, rheumatism, erysipelas and cholera, it has the characteristics of a true psychosis, and oftentimes a psychosis of very exhausting character. One of these characteristics is lack of high fever, which indicates the action of toxins rather than of bacteria. Similar in symptoms to these toxic cases are those which follow physical exhaustion generally, but especially such states of exhaustion as result from losses of large quantities of blood—notably after surgical operations and puerperal conditions.

While these psychoses are essentially of temporary character, the prognosis is not universally favorable. When they manifest themselves in brains markedly predisposed to insanity, the mental defects are often permanent; and when associated with conditions of great physical exhaustion, they not infrequently end fatally. Varying with the fancy of the classifying alienists, they have been given a variety of names, prominent among which are toxic insanity, acute exhaustion delirium, collapse delirium, confusional insanity, acute primary mental confusion, amentia, delirium grave and the like. It is probable that little more is indicated by this diverse nomenclature than the degrees of severity and the causes.

Thus amentia is mild and of favorable omen, while delirium grave, as described by Spitzka, is without exception fatal. Fundamentally, all these cases are similar in their symptoms—namely, in a delirium of varying degrees of activity, with the physical manifestations of debility, pinching of the features, dryness of the mouth and tongue, abnormalities in the heart action and gastro-intestinal disorders. Although not generally put there, traumatic delirium belongs to the above category.

Nearly all forms of insanity have head injury advanced as a cause, but the only variety that can be regarded, with any degree of certainty, as resulting from *trauma capitis* alone, is traumatic delirium. This psychosis appears immediately or succeeds by a few days the unconsciousness due to the injury. In its symptoms and course it is hardly to be distinguished from deliria of other origins. Like them it has an uncertain prognosis, varying with the degree of injury to the brain and with the individual acted upon, alcoholism being the most important predisposing cause.

Another frequently mentioned exciting cause of delirium (especially of the type most frequently described as confusional insanity) is nervous shock, under which term are included sudden fright, grief, remorse, and perhaps even joy. This factor is one to which it is always difficult to ascribe an appropriate causal value; one, also, which is often invoked as a sole cause when it is really only one of many.

The importance of emotional factors in the causation of either somatic or mental diseases cannot be minimized. No one, be he physician or layman, can doubt the active part played in the production of disease by the contributing causes of the emotions. It is seen in daily social life, in the routine practice of medicine, and especially after great catastrophes and tragedies, such as explosions, battles, conflagrations, earthquakes, tornadoes, etc. In Reibal's paper descriptive of the Siege of Strasburg (*Gaz. Méd. de Strasburg*, 1877, XXXVI, 86-91) a graphic account of such effects is given.

The bombardment of Strasburg lasted from August 15 to September 28, 1870. The terror to the inhabitants of the town was indescribable. Shells, bombs, fuses, were sent almost uninterruptedly into the heart of the city. To this were added the fires, which raged everywhere. At times the city streets were said to be practically full of molten iron and lead and burning débris. Reibal describes seven cases of cerebral disturbances, two of which will be again referred to, in which a fatal issue was the direct result of the bombardment. In at least four cases, the patients were already infirm. He also observed two cases, in women, of epileptic convulsions. Neither had had convulsions previously. In one case the convulsions disappeared—in another they became regular in occurrence. These convulsions were regarded as truly epileptic, and were differentiated from hysterical convulsions. Reibal also saw one patient in whom itching, as the initial symptom of a fatal diabetes, developed while she was huddled in a pit where she, with others, had sought refuge from the flying shells. Subsequently to the siege, also, he noted a great increase in the number of cases of diabetes; and of deaths, from cerebral causes, in infants.

[1] Read before the Clinical Society of the Elizabeth General Hospital, at Elizabeth, N. J., January 19, 1904.

But, important as emotional factors are in causation, to prove them unique factors is a different matter. Psychic shock may, doubtless, induce heart failure or apoplexy. But in such cases, vascular disease pre-exists. Sudden death with emotional factors as a cause is not mentioned in Brouardel's "Death and Sudden Death," and I feel safe in saying that the case is yet to be advanced in which life ceased as the immediate consequence of such causes alone. General medical diseases are rendered worse by emotional causes, and resistance to them is lessened thereby. But they do not originate in such causes, whatever the Christian Scientists may say to the contrary. Of the diseases of the nervous system, the neuroses are the only ones in which fright and similar causes are really important causes. Chorea commonly, and paralysis agitans and exophthalmic goiter in a few well authenticated instances, have been the unique results of fright. Squiers (*New York Medical Record*, 1887, XXXII, 190) reports the case of a girl frightened by a plate falling on her, in whom the pulse rate changed from 75-80 to 135, remaining at the latter rate for two years, up to the date of the communication. Fright figures prominently also, in the etiology of epilepsy, though it probably causes true epilepsy only in persons predisposed to the development of the epileptic habit.

Hysteria and neurasthenia are the neuroses in which emotional causes figure most prominently in etiology. In the majority of cases, associated with the fright or other similar cause, is some bodily injury, trifling though it may be. With this physical factor present, the emotional cause loses in importance more or less, varying with the personal equation of the observer. Thus, dependent upon the mental inclinations of different writers, the traumatic neuroses arise from causes chiefly material or chiefly psychic. (In litigated cases some bodily injury must be proved. Whatever the mental or moral effects of an accident may be, it is not a cause of action unless there be some bodily injury. See Mitchell vs. Rochester Ry. Co., 151 N. Y., p. 107.) Either neurasthenia or hysteria may result when the causes are purely psychic, but in a large number of such cases marked predisposition of the affected person is demonstrable.

In insanity, with its complex and little understood etiology, it is well-nigh impossible to single out any one factor as the sole cause. Emotional factors operate here more commonly and more effectively than in somatic diseases. But the opportunities of error in assigning causes are great. Many forms of insanity, such as general paresis, in which we know there is an etiology distinct from the emotions, begin, in sequence to a nervous shock, with symptoms of delirium. When insanity begins in persons with marked predisposition, any apparent exciting cause loses greatly in importance. Recurrent psychoses set in quite commonly after the most trivial and (in themselves) inadequate causes. And many other emotional disturbances in the predisposed occur in a way to make it evident that the symptoms are not the products of any exciting cause, but are merely the fluctuations of deep-seated disease, which appear either independently of exciting causes, or as the results of such disharmonies of existence as all mankind must undergo.

In studying the literature relative to this subject, I was surprised to discover how few cases there are in which insanity can legitimately be regarded as the result of nervous shock, the test being, absence of predisposition and other causes, and a nervous shock of great intensity.

It is the object of this paper to call attention to a few cases in which these conditions are fairly well fulfilled:

Case I.—This case possesses the advantage of being full in the important details bearing upon the patient before, during, and after the accident. The accident was the tunnel disaster in New York City on January 8, 1902, which was the result of a rear end collision on the tracks of the New York Central and Hudson River Railway. The patient, W., had been, prior to the accident, an active man without hereditary taint, and with no history of syphilis or alcoholism. He was fifty-four years of age, married, with healthy children. He had built up a large and lucrative business, in which he was the senior partner. He had general supervision of the business, made all the estimates for orders, and had personally conducted large exhibits at expositions, the last being the exposition at Buffalo. The following account of the accident is from his own recollection of it. It has been substantiated in all important details by statements of others. W. was in the rear car near the middle, seated alone, and was absorbed in planning the day's work when the train stopped. In about five minutes there was a terrific crash. The rear end of the car seemed to be lifted up and turned completely over. The top was broken in by the top of the tunnel. The next thing W. knew he was lying by the side of the engine that had run into the train from behind. He was pinned between the brick wall of the tunnel and the boiler of the engine in a space not more than two feet wide. He was lying by the side of the boiler with his legs pinned down and fastened in the débris. His feet were caught between the seats, which were jammed so closely together that he could not put his flat hand between them. The engineer asked if he should not back the engine, but was told that he would tear them all to pieces if he did. The steam escaped in volumes, and the heat was almost unendurable. The fear of being scalded and of fire was frightful. There were two ladies back of W., one of whom was screaming terribly, being badly lacerated, with ear hanging, and nose being driven up into the head. Her head was hanging through one of the arches of the tunnel, and she kept calling for some one to keep her from falling. W. reached back with his left hand, and with great difficulty straightened her up. He held her in this position for at least three-quarters of an

hour. There were others near him, screaming, one with the top of the car apparently resting on the top of her head. She screamed that she was dying. The steam came constantly up into her face. W. tried to lift the top of the car but could not. There were several dead bodies in the débris close by. In about an hour two men came with a crowbar, and began to pry open the seats. The ladies were taken out first, and the roof of the car cut open to let the steam out. The lower part of both of W.'s legs were crushed, and he could only lift them by taking hold of the lower part of his trousers. He was put on a stretcher and lowered to the tracks, carried up the tracks a way, and then up the steps and into a Bellevue Hospital ambulance. His suffering was almost unbearable, and lasted until he became unconscious when put in the ambulance. He did not regain consciousness until after entering the hospital. He remembers it, but it was all like a dark dream, and he does not know how much of what took place is real or the creation of his fancy. It seemed to him as if he were going into a slaughter-house.

These gruesome details are necessary to enable one to picture the terrific mental agony undergone by all who were conscious while imprisoned in the semi-darkness in which this tragedy took place.

At Bellevue Hospital W. was found to have compound fracture of both bones of both legs, without other surgical injuries. There were no scalp wounds or contusions about the head, and there is no reason to suppose that he had sustained any cranial injury. The day after admission to Bellevue Hospital he received a good many visitors, and on the afternoon of that day he went into a condition of partial stupor. After this condition had existed for a day or two, he was transferred to a private hospital in the care of Dr. John B. Walker, in consultation with whom I saw him on January 13, 1902. While in the private hospital, prior to my examination, his sleep had been much interfered with, he was out of his head most of the time, and muttering constantly, much of which was unintelligible. He was restless, but the crippled condition of his legs prevented him from getting out of bed. He would hold both hands up in front of his face, and say that he saw the headlight coming down on him all the time. There was no vomiting. To the questions I put to him at the first examination, he gave no answer, and it was only with difficulty that he could be induced to perform such simple movements as putting out the tongue, etc. He lay in bed with eyes closed most of the time. From time to time he would suddenly open them, raise himself up from the bed, hold his hands out in front of him with face averted, but would say nothing. For two days he had to be catheterized, and on one occasion had an involuntary passage of urine in the bed. The temperature never reached 100° F. There was neither suppuration nor pulmonary symptoms to explain the mental condition. The pulse varied from 80 to 108. There was no paralysis of any cranial nerve nor of the hands. Both legs were in splints so the knee-jerk could not be examined. Two days later the condition was practically the same. In response to questions the patient would sometimes make inarticulate replies, and sometimes would not answer at all. He still made the movement of putting his hands before his face. He picked at the bedclothes, and his eyes wandered about the room. On January 16 he was somewhat better. He spoke to me, put out his hand, said "How do you do," and asked what my name was. He said that people were constantly coming to see him, but he did not know who they were. Said that the attendants had tied him down so tight yesterday that he couldn't make anything out of it. Many of his remarks were incoherent, but he evidently recognized people in the room, and appreciated the fact that his mind had been clouded for some time. On January 18 his mind was somewhat clearer, although he still did not know where he was, and could not remember names. He was tested at this examination for reading and writing. He was unable to read, and could not write intelligently at dictation. I next saw him on January 22. On that day he did not know the name of the hospital where he was, said he "remembered me from having seen me between two points in the North Shore." He said that one of his legs was splitting up into three branches, and the other had a "tap" on it. He thought he was setting out flowers. On January 29 there was evidence of great physical exhaustion, shown by very low tension pulse and weak systole. The mental state remained about the same, although at night he was apt to become very much excited. He began slowly to improve, and in the course of a few days, his mind became very much clearer. On February 8, however, he developed erysipelas, and with the fever accompanying this infection the symptoms of delirium returned, and were present for ten days or more. I did not see him again until June 13, 1902. He had left the hospital, had no further symptoms of delirium, and was able to get about a little on crutches. He said at that time he was sleeping well, that he only waked up two or three times during the night, and slept until five o'clock in the morning. This amount of sleep was still below his normal standard. His appetite, he said, was good; he had no headache, but was entirely unable to endure physical or mental effort. He had great tremor of the tongue and of the hands. He was able to read understandingly, but was inclined to slur over many words. Many simple words he did not understand, and some he could not read correctly. Thus, for *colleagues* he read *collect*, for *repudiation* he read *reputation*, for *directorate* he read *directors*. In writing there was evidence of great tremulousness, and in very simple sentences he forgot to dot his i's. He left out letters, he left out words, and some letters he seemed entirely unable to make. Of simple problems given him in addition, multi-

plication, subtraction and division, the addition was correct, the multiplication was left incompleted, the subtraction was wrong, and the division he was unable to do. Asked to subtract mentally, 31 from 66, he said it was 29. In counting small change he made mistakes. Asked what day of the month it was, he said it was June 14, 1892. He then looked around to see if he was right with an air of uncertainty, and corrected himself to 1902. His memory for the time preceding the accident was perfect, and that for the time immediately after the accident good. But from shortly after admission to Bellevue Hospital memory was very defective.

My next examination, made on February 11, 1903, gave practicaly the same results as that of June, 1902. The patient complained of dreams of terrifying character, which woke him up in the night very much alarmed and frightened. Said that he had tried to resume his business, but had been obliged to give it up. He found that he was very inaccurate in his business transactions, and that being in business made him very much more nervous. He still had serious defects in that part of the mental sphere which has to do with language and numbers. He made mistakes in words and in reading, and after reading could not give the meaning of a simple sentence. In writing, also, he misused words in a way which destroyed their meaning. He said that he had not written any business letters since the accident. His speech was somewhat thick, there was tremor of the tongue, and there was also distinct interference with the intellectual mechanism of speech. He used words incorrectly, and many words he did not seem to understand. For example, he said "in revelation of" instead of "in relation to." Much that he read he did not seem to understand. When reading a few sentences about a yachting cruise, he thought it was an account of the Spanish War, and in reading about white duck suits, such as are worn in the tropics, he thought that the wearers of the suits got them to shoot ducks with. Given the same problems in arithmetic as at the previous examination he made the same mistakes.

My last examination made October 15, 1903, showed improvement in many ways, but no real change in fundamental conditions. He made the same mistakes in arithmetrical problems, in reading and writing. With the exceptions previously noted, his memory was perfectly clear, although he was uncertain about many of his facts. He had returned to business, but was unable to take any active part in it. He said that he made so many mistakes in writing, that he now never wrote a letter unless some one read it over afterward, and that the making of estimates, which formerly had been his specialty, he was now entirely unable to do. He was unable to take orders over the telephone, as he had difficulty in comprehending what was said rapidly, and could not remember the orders when the telephonic communication was over. From the earliest period of his illness his mental state became worse on any concentrated effort. When he began to clear up a bit from his original delirium, a few moments' conversation would cause him to relapse again into delirium. This condition of ease of fatigue is still present. He can do the first arithmetical problem quickly, and with better chance of being right, than he can the fourth. There have never been any hallucinations other than those incidental to the delirium, and never any fixed delusions. I feel no hesitancy in saying that exaggeration played no part in the case. There was none of the exaggeration of the ordinary neurasthenic type, as he vigorously combated and resented the idea that his mentality was affected. Neither was there any of the exaggeration so common in litigation. He took little interest in his claim for damages, which was settled without trial.

To briefly resume: A previously healthy man, after a severe mental shock, lasting about two hours, during which he is obliged to make muscular exertions and receives serious injuries of the extremities, passes into collapse delirium. This state, in addition to the ordinary mental symptoms of delirium, manifests itself by weakness of the muscles of the bladder, and by a weak heart. About to subside, it is again called into activity by a complicating infection. At its final subsidence the patient is left in good physical condition, but with the following mental defects: Slowness in perceptions, and indecision and instability of recent memory impressions; absolute uncertainty in the arithmetical faculty; decided impairment in the faculty of written and spoken speech. Such a mental state is distinct from the delusional one of hysteria. With neurasthenia it has more in common, especially in that it is aggravated in every way by fatigue. But the absolute mental defects in the case described are not found in simple neurasthenia. The neurasthenic is capable of all, though his capacity be of short duration. Our patient is in several respects incapacitated. The early and subsequent history of the case suggest a close analogy with the pathological mental states and their results occurring as the direct sequels of the infectious diseases, of surgical operations, and of conditions of exhaustion generally. With psychic shock as the chief etiological moment, we are obliged to assume an exhaustion of the cortical cells brought about by brief, but excessive, stimulation.

Case II.—Mrs. S., twenty-seven years of age; had always been normal mentally; gave no history of hereditary taint. She had been happily married for five years. One miscarriage, no children. On December 22,1897, she saw her husband, to whom she was very much attached, walking on the street with a young and comely woman. From the other side of the street she watched the pair, until she saw them disappear in a house. She waited, and soon saw a light lit in one of the upper rooms of the house, and her husband come to the window and draw down the shade. When the husband returned to his own house, less than an hour afterward, he found his wife in tears and

unwilling to be comforted by any explanations he had to offer. She said her heart was broken, that she could never trust him again. She did not sleep that night, and the next day was still more disturbed. The condition of insomnia, grief, and agitation became progressively worse until, finally, I was called in consultation, five days after the occurrence, by the family physician, Dr. A. H. Ely. The patient was in bed, in seemingly good physical condition. There was no fever. She had passed no urine for twenty-four hours. The mental picture was that of confusion. The patient did not know where she was. Did not recognize that Dr. Ely and I were physicians, but took us for some of her former acquaintances. Said at one time that she had not seen her husband (who was in the room) for six weeks; at another, for three months. She had the illusion that strange people were in the room. When asked questions would make irrelevant replies. The occurrence which was the cause of the attack seemed to have disappeared from her mind. She could not be aroused to a realization of her surroundings. This condition of affairs lasted for two or three weeks; then the patient began to improve, and made a perfect recovery. Up to the present writing she has had no relapses.

Case III.—(Binswanger, "Ueber den Schreck als Ursache psychischer Erkrankungen," *Charité Annalen*, 1879).—Binswanger reports a case of a woman, who, although always timid and easily frightened, had never shown symptoms of mental alienation. There was no insanity in her family, and she had healthy children. On learning that one of her tenants had hanged himself in her house she fainted, but soon recovered herself. She then began to cry and bewail and could not be comforted. She continued to cry and moan, day and night, for five days, and then she began to wander in speech, and to throw herself about the room. She neither slept nor ate, and paid no attention to those about her. A little later her attention could not be aroused, the sounds she uttered were no longer intelligible, she sat rigidly with head between knees, offering resistance to any interference, including attempts to feed her. Ten days after the fright the bowels and bladder were evacuated involuntarily; the patient had not slept, but was tired and restless. On the eleventh day she died in coma. The autopsy showed multiple punctate hemorrhage in the cortex, in the cerebellum and on the base of the brain. Such pathological changes as were present in the cerebral blood-vessels were distinctly atrophic in character. There was no local arterial disease. The walls of the arteries were, however, weakened throughout, and Binswanger explains the case by assuming a sudden rise in blood pressure from the fright.

Case IV. (Landgraf: *Friedreich's Blätter für gericht. Medicin*, 1885, XXXVI, 458-65).—A little girl of 7½ years; a normal child, apparently, in every way, was frightened by two boys dressed up as ghosts. She rushed home, crying "Oh! my eye! My eye!" Without giving further explanation she sank exhausted to the floor, vomited and went into severe general convulsions. These continued till the child died less than ten hours later. The municipal report (Bayreuth) stated that the autopsy showed no anatomical cause of death, other than an excessive distention of all the blood vessels of the brain and cerebral membranes.

Case V. (Manson: *Lancet*, 1846, II, 582).—A girl, 2½ years of age, previously normal, was greatly frightened on October 2 by a boy in a mask. She could give no explanation of the cause of her fright. She trembled violently, and all she could say was "The bogie, the bogie looked through the window at me." Her health declined rapidly. On October 14 she was restless, calling "Bogie, bogie." The next day she did the same, and went into convulsions which were confined to the diaphragm and face—sobbing and sighing—that evening she died. The autopsy showed great congestion of the brain and its membranes.

Case VI. (Reibal: *Gaz. Med. de Strasburg*, 1877, XXXVI, 86-91).—A physician was suddenly forced to leave his house which had been set fire to by a bomb. He soon developed terrifying hallucinations with insomnia and agitation, which gave place to coma and paralysis. He died in five days.

Case VII. (Reibal: *Op. cit.*).—A boy of ten was frightened by a cannon ball, which passed close to his head. He ran home, but was immediately taken with chills, vomiting, delirium and convulsions, and died in a few hours.

The above cited cases give a general idea of the character of the symptoms, and the variations in their severity, which result from nervous shock in presumably normal persons.

The mental symptoms are essentially delirious. In severity, they vary, from slight and transient attacks of mental confusion, to profound disturbances of consciousness with the physical symptoms entailed thereby.

In outcome, there may be complete and permanent recovery, or recovery with defect, or as shown in the very instructive case of Binswanger, the symptoms may become progressively worse and end fatally.

Into more specific statements regarding the clinical behavior of these cases it seems impossible to go. They are, in the first place, too infrequent to permit of generalization. Further, the two causal factors, the exciting moment and the individual acted upon, are so extremely variable, that a large number of collected and assorted instances would be necessary before any definite deductions could be drawn. As has been said, such a number of cases is not available.

While the pathology of delirium from nervous shock is entirely in speculative domains, there are strong reasons to suppose that it is closely connected with disturbances in the cerebral circulation. Certain it is that evidences of disturbed circulation are always present. In fright, the blood first leaves the

body surface, there is tumultuous and rapid action of the heart, and probably an increase in blood pressure. Increased blood pressure in frightened animals has been demonstrated by Conty and Charpentier and by Bezald and Dainlewsky. (See Werner, "Ueber die Geisteskrankheiten nach Kopfverletzungen," *Vtljahrschft für gerichtl. Med.*, 23, 1902.) After the initial period of excitement, the effects upon the circulation are different, doubtless, in different cases. In some there is persistent tachycardia. In others the pulse is slow. A fall in blood pressure follows the initial rise. Vascular instability is shown in the changing character of all the symptoms.

As has been said, the symptoms of delirium from nervous shock are strikingly similar to those of the insanity characteristic of head injuries. It is highly probable that traumatic delirium is due, not to the mechanical disarrangement of brain constituents, but to changes in blood supply and pressure, and in brain pressure.

It seems reasonable to suppose, therefore, that traumatic delirium and the delirium from emotional causes are closely allied in pathogenesis, as they are in their clinical aspects.

A NEW PORTABLE SPHYGMOMANOMETER; ALSO A BLOOD PRESSURE CHART.[1]

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It is with considerable reluctance that I added to the rather long list of instruments for determining human blood pressure, but, after using almost all the previous forms, my desire to possess one which could be easily taken about in my hand-bag, and yet be substantial and accurate, impelled me to do so.

The main defect of most of the existing sphygmomanometers, which use Riva-Rocci's method of circular compression, is too small width of compressing surface. Von Recklinghausen, in 1901, demonstrated conclusively that no armlet less than 12 cm. wide can give accurate readings in arms much above the average size. No instrument with such an armlet was obtainable when I began my experiments, but Erlanger has since modified his excellent, though scarcely portable, apparatus by the introduction of a cuff of this width, and Stanton has brought out a fairly satisfactory instrument, with a compromise armlet of 8 cm. Apart from these, no portable apparatus used rigid tubing, or a wide enough caliber of manometer tubing to allow satisfactory transmission of the pulse wave, and the estimation of diastolic pressure. Under certain circumstances, especially for diagnostic purposes, this is of distinct value.

For my purposes I solved the problem of combining portability with accuracy, by not attempting to pack all the parts of the apparatus in one case. The armlet and inflating bag are not breakable, and can be carried with the case containing the manometer in an ordinary instrument bag. It seemed unlikely to me that any one would carry a sphygmomanometer without also taking some other instruments, and therefore a small hand-bag, with him. All the parts together weigh only 2½ pounds, and the manometer case measures 10¼ inches in length.

The instrument, as shown in Fig. 1, consists of three essential parts:

(*a*) Manometer, of U-tube form, with upper part jointed, fixed to the under side of case lid. The scale is graduated empirically for each manometer, since even-calibered tubing cannot be had in this country. The caliber used is 3 mm. The jointing of the manometer tube is copied from Cook's ingenious instrument.

(*b*) Compressing armlet, consisting of a hollow rubber bag, 12 by 18 cm., with a valve-stem for connecting with manometer. This is provided with a loose thin cover, for protection, and is attached to an outer leather cuff, which fastens by two encircling straps with friction buckles. This arrangement of straps was the fruit of considerable thought and experiment, and, in my hands, has proved a satisfactory method of fitting arms of all sizes with the same cuff.

(*c*) Inflator, an eight-ounce Politzer bag with valve. This was first used for the purpose by Erlanger, though without the valve, which has become necessary with the large armlet. Heavy pressure tubing is used for the connections. The technic of the instrument follows:

To set up the Manometer.—Unhook the lid and pull it up until it stands plumb. Drop the catch on each side behind and push the hook over the pin on brace to left, thus fastening the manometer securely in an upright position. Push the brass stop-cock (E), which contains a needle-valve, through the hole in the front of the case. Attach tube and Politzer bag (C) to it. Insert the upper joint of manometer tube, giving it a twist to make sure that the joint is tight, and slip the rubber band over the top. Slide up the scale until the O point is level with the top of the mercury column in both tubes.

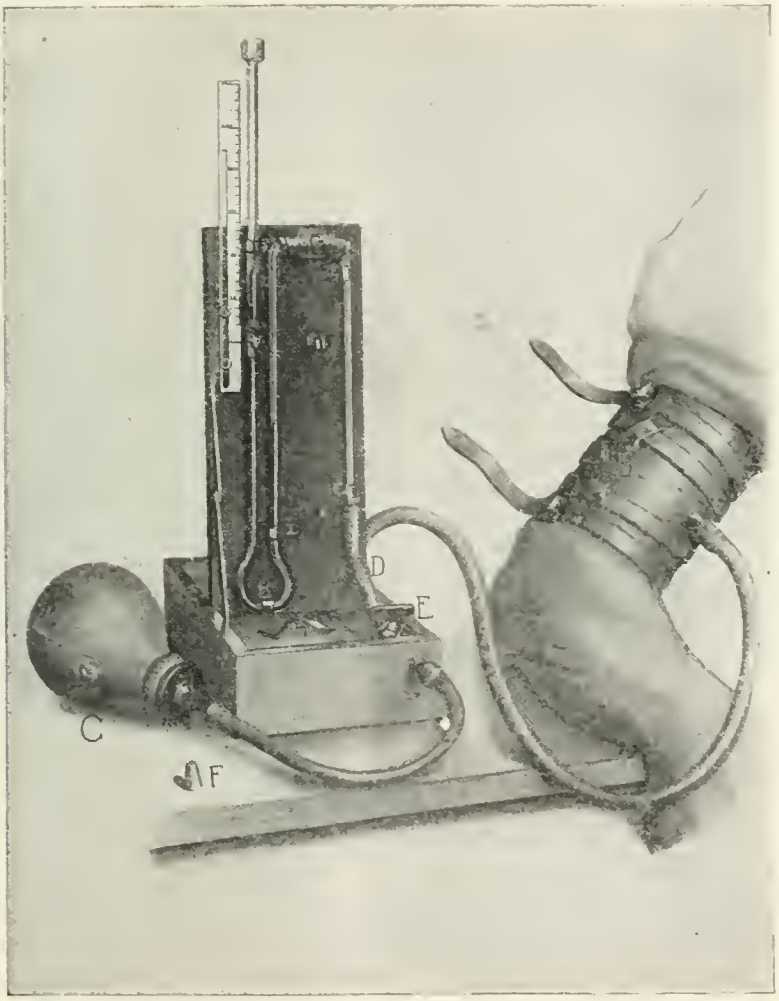
Directions for Use.—Adjust the armlet carefully above the elbow, the outlet tube over inner border of biceps. If the arm is very small, the straps will have to be passed over the slits on the end of the cuff which laps inside, not through them as usual. For children the thigh may be used. Have the cuff fit as snugly as possible without squeezing. Observations may be made with the patient either lying or sitting, but should always be in the same posture. In either case the armlet should be at the level of the heart. The patient must be at rest, as exertion, excitement and apprehension all raise the blood pressure. With one hand feel the radial pulse. With the other squeeze the Politzer inflator until the pulse disappears, then release the pressure very slowly and note the height of the manometer column at the moment the pulse is again perceived. Immediately raise the pressure just

1 Received for publication April 6, 1904.

enough to obliterate the pulse and make a second reading as it is released again. The average of these two gives the systolic arterial pressure. (Criterion of Vierordt and von Basch.)

If difficulty is experienced in controlling the pressure with the hand, close the stop-cock (E), when the pulse has been obliterated. By manipulating the stop-cock the air may be allowed to escape slowly through the needle-valve and the reading easily made. It is quicker to work with the hand alone, but requires a little practice. the pulsation of the mercury column at each point. This will increase for a time, then continue of same extent for some millimeters. At a definite point the height of pulsation will decrease rapidly. The last point at which it is greatest is the diastolic pressure (criterion of Marey and Mosso). Two measurements of this should be made. Unless a pulsation of 5 mm. is obtained, no accurate measurement is possible. This happens in rapid or very small pulses and with too loose adjustment of the cuff.

Fig. 1.



Sphygmomanometer in Operation.

When the tension is high, the air in the Politzer may be insufficient to give the required pressure. In such cases, close the stop-clock, allow bag to refill, then, while squeezing it, open the stop-cock and raise the pressure as high as desired. With high pressure, be sure the upper joint of manometer is tight.

To Estimate the Diastolic Pressure.—After obtaining the systolic, allow the pressure to fall 5 mm. at a time through the needle-valve, watching

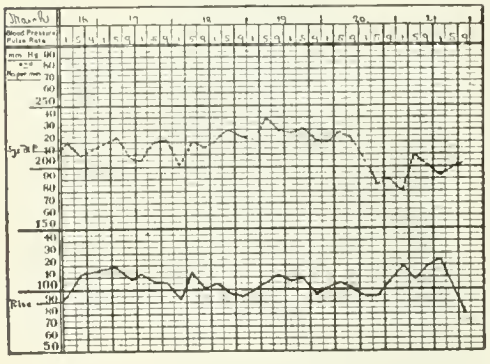
To Close the Manometer for Carrying.—Remove upper joint and place it in the rings to right. Insert cork (F) firmly in open end. Unhook the brace, drop catches at back, and shut the lid, locking it tight. The rubber joint (G) is automatically closed by a block at bottom of case. The stop-cock is to be caught under spring (H). If the mercury column breaks in carrying, shake it down before removing the cork. To fill manometer, use a medicine dropper, and, if drops do

not go down freely, run a thin wire through the tube to insure their passage into liquid below.

This sphygmomanometer is now being made for any who desire it, by Chas. E. Dressler and Bros., 143-145 East Twenty-third Street, New York City. Mr. Dressler has been of great assistance to me in solving many of the mechanical difficulties met with, which required several months' time to overcome. The needle-valve is his own construction. My own instrument has now been in use for three months and has proved quite satisfactory. In the hospital, like every instrument I have ever had there, it has suffered too much from careless usage, and I have had made a more substantial one piece manometer, without a folding case, for service in my wards. In other respects it will be found to be the same instrument.

In my hospital work I found it so difficult to obtain satisfactory blood pressure records, either on modified temperature charts, or on any of the engineer's ruled papers, that I devised the accompanying chart for the purpose (see Fig. 2). Its

Fig. 2 (reduced).



important features are: legibility at a distance; a single column of figures for blood pressure and pulse rate (also respiration if desired), so that mistakes in charting cannot occur; availability for observations at short intervals, or for b. i. d., q. 4. h., or q. 3. h. records; especially the adoption of the ordinate scale of the U-tube manometer tracing, 0.5 mm. = 1 mm., so that the curve of blood pressure obtained clinically can be compared exactly with tracings made in the physiological laboratory, and are not distorted by a purely arbitrary spacing. In use, systolic pressure is recorded by a solid red line; diastolic, broken red; pulse rate, solid blue or black; respiration, broken blue or black. At operations a double-ended pencil, red and blue, makes a chart which can be read across the room. These are made for me in blocks of fifty by George W. Buskirk, Sixth Avenue and Thirty-fourth Street, who is prepared to supply them to any gentlemen who desire to procure these accurate and convenient charts for recording their observations.

36 West Fortieth Street.

OSTEOPLASTIC AMPUTATIONS.[1] [2]

BY ALEXIS V. MOSCHCOWITZ, M.D.,
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ADJUNCT ATTENDING SURGEON TO MOUNT SINAI HOSPITAL.

THIS article is based upon the following major amputations by osteoplastic methods, which I have had opportunity to perform on the First Surgical Division of Mount Sinai Hospital since May 18, 1900. One amputation of the thigh; one Ssabanejeef amputation at the knee; three amputations of the leg; one amputation at the ankle-joint; one Pirogoff amputation; and one amputation of the thumb. In addition I have also had occasion to perform a number of pure and simple exarticulations, and a number of amputations without any osteoplastic procedure, which are more than interesting, when studied in conjunction with osteoplastic methods. Furthermore, during this time I have always availed myself of various opportunities to carefully examine all amputation stumps which chance threw in my way, no matter whether performed by osteoplastic methods or not, so that, I believe, I am now entitled to speak with less reserve than when my first communication on this subject appeared, in the MEDICAL NEWS of February 9, 1901.

It is not essential for my present purposes to go into details in the presentation of my cases; I shall confine myself therefore to the briefest possible abstract from their histories, and to a severe criticism of the ultimate outcome in those cases in which it is indicated.

Case I.—A. T., eighteen years of age, was admitted to the hospital January 11, 1900. There was a long antecedent history of tuberculosis of the left ankle-joint, and many operations had been performed for its cure. Osteoplastic amputation in the middle of the leg performed May 18, 1900; followed by primary union, and patient was discharged June 10. The result is perfect, not the slightest pain or tenderness; patient wears an end-bearing artificial leg.

Case II.—B. D., thirty-two years of age, was admitted to the hospital June 21, 1900. Diagnosis, gangrene of anterior portion of foot due to Reynaud's disease. June 29, at the express request of the patient, a Pirogoff amputation was performed, but the gangrenous process soon involved the incision, necessitating an amputation at the seat of election on July 7. Patient was discharged August 15. The bad result in this case was due to an error of judgment, which led me to accede to the wishes of the patient for a low amputation, while only a higher one was indicated. Certainly no blame for its occurrence is to be attached to the method.

Case III.—B. A., thirty-four years of age, was admitted to the hospital August 7, 1900, with gangrene of the right foot due to Reynaud's disease. August 11 amputation of the leg by the Ssabanejeef method. The operation was easily and rapidly performed, and was not followed by any

[1] Read by invitation at a meeting of the Waterbury, Conn., Medical Society, March 14, 1904.

[2] Received for publication April 27, 1904.

shock. Four and one-half hours after operation the temperature rose to 107.5° F., and one hour later to 108.5° F.: in spite of energetic treatment patient succumbed soon thereafter. At autopsy nothing of consequence was found. August 11, 1900, was a particularly hot and muggy day, and we came to the conclusion that the fatal outcome in this case was due to insolation; this view is borne out also by the fact, that another case (radical operation for inguinal hernia), operated upon on the same day, was followed by the same train of symptoms. Certainly no blame for the fatal outcome is to be attached to the particular method of operation.

Fig 1.

Osteoplastic Amputation of Thumb.

Case IV.—W. K., twenty-five years of age, was admitted to the hospital August 14, 1900, with an infection of the interphalangeal joint of the left thumb. The joint was incised and drained, but the adjoining surfaces necrosed, necessitating an amputation, which was performed August 25 by the Bier method. On account of the extensive infection secondary sutures were used, and but very little hope was entertained for a good result. We were agreebly disappointed, however, as the bone flap united, and, after tying the secondary sutures, primary union resulted. (Fig. 1) Patient was discharged cured September 2. Some two years later I had occasion to examine the stump and found it to be absolutely devoid of pain or tenderness.

Case V.—A. S., fifty-six years of age, was admitted to the hospital October 30, 1900, with a rapidly growing sarcoma of the big toe. November 2 amputation in the upper third of the leg by the Bier method. A marginal necrosis of the bone flap occurred. On account of metastases it was deemed most wise to hasten the closure of the sinus by removing the flap on January 20, 1901. Patient was discharged March 3, 1901. At the secondary operation we have gained the impression that in due time the necrotic areas would have become exfoliated, leaving ample covering

Fig. 2.

Osteoplastic Amputation of Leg.

for the sawn surfaces of the tibia and fibula, and in no way marring the ultimate result: but on account of extensive metastases it was not deemed worth while to wait for a separation of the necrotic areas.

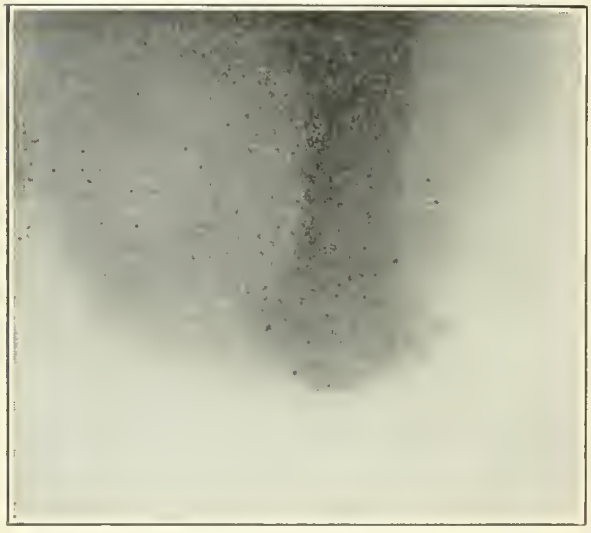
Case VI.—M. R., nineteen years of age, was admitted to the hospital June 3, 1901, with a tuberculosis of the right ankle. The joint was resected on June 7, going wide of the diseased area, but in spite of this there was a recurrence, necessitating a number of secondary operations.

Finally the case came to an amputation, which was performed October 21 by the Bier method. (Fig. 2) Primary union resulted and patient was discharged cured December 4. Several months later I had occasion to examine the stump and found it to be perfect in every detail.

Case VII.—R. H., thirty-two years of age, was admitted to the hospital May 5, 1903, with a spontaneous fracture of the tibia, caused by a rapidly growing sarcoma. On May 11 the thigh was amputated by Bier's method. (Fig. 3) Primary union resulted and patient was discharged cured June 7. Patient wears with perfect comfort an end-bearing artificial prothesis; the stump has not atrophied, and is neither painful nor tender in the slightest degree. In the skiagraph of the case there is to be noted the large amount of callus between the apposed bone surfaces.

Case VIII.—J. K., twenty-three years of age, was admitted to the hospital September 27, 1903,

Fig. 3.



Osteoplastic Amputation of Thigh.

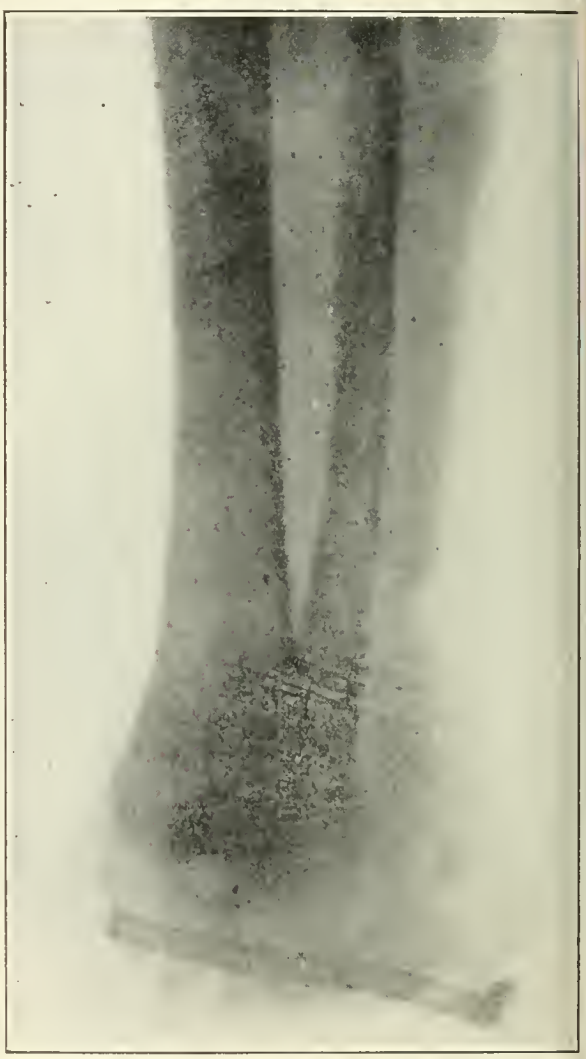
with an extensive deformity of the left foot, due to trauma. On October 2 the foot was amputated at the ankle-joint, by an osteoplastic procedure, the various steps of which are described in the *Annals of Surgery* of May, 1904. (Fig. 4) Patient was discharged cured January 17, 1904. The stump is perfect in every detail, and patient wears an artificial prothesis, which is only very little different from an ordinary shoe.

The main object of this article is to prove the superior advantages of amputation stumps formed by osteoplastic methods, as opposed to stumps formed by the older methods; but in order to do so understandingly, it is necessary that I digress for a moment, and discuss, if ever so briefly, the physiology and pathology of amputation stumps.

Strictly speaking an amputation stump has no physiological function in itself; whatever physiological function is ascribed to a stump is done only by the addition of an artificial prothesis, which is to act as a substitute for the amputated portion of the extremity. By the addition of such artificial prothesis the important physiological functions of "support and locomotion" are derived.

If the normal physiological function of an amputation stump is of importance, a disturbed physiological function is of still greater moment to individuals who have been unfortunate enough

Fig. 4.



Osteoplastic Amputation at Ankle-joint.

to require an amputation; and as all amputation stumps, performed no matter upon which part of any extremity, may become pathological, it is important to pay just as much attention to stumps of the upper extremity as to those of the lower extremity. It is not my aim to weary you with a detailed description of the various pathologico-anatomical conditions to which amputation stumps are liable; suffice it to say, for our present pur-

pose, that there are certain symptoms common to all, and the most important of these is, pain or tenderness, or both. The importance of these two symptoms is due to the fact that it is their presence which prevents the respective amputation stumps from fulfilling their normal physiological functions of "support and locomotion."

To recapitulate, therefore, it might be said, that a stump is perfect and to be looked upon as normal, only when it is fully able to carry on its physiological function of support and locomotion; every other stump, which does not or cannot conform to these requirements is abnormal and pathological.

One would think that these simple facts ought to be universally accepted as true, particularly when it is considered that the operation for ablating an extremity is one of the oldest known to surgery; but this is not the case; on the contrary, the opinion was prevalent that there are certain ills inherent to amputation stumps, which must be accepted as one of the evil consequences of the operation. It is practically only within the past decade that the dawn of a new era began to assert itself, and more and more attention is beginning to be paid to a good physiological function of the stump.

The question arises, therefore, which one of the various structures which enter into the composition of a stump forms the deciding element as regards its good or bad function; as it is only by knowing this element that we can take steps, either for its preservation or exclusion. Every one of the more important structures, which enter into the formation of a stump have at one period or another been blamed; it is necessary, therefore, to critically examine all, viz.: (1) The integument; (2) muscles, tendons and fasciæ: (3) the nerves; (4) the cicatrix; (5) the bone and periosteum.

1. *The Integument.*—For a long time the skin which covers the stump was looked upon as the most important factor; and many operative incisions were designed, mostly with the object in view to obtain the most suitable integument for covering the stump. It was particularly stated that only such skin can be utilized effectively which is designed by nature for pressure; to prove the fact that only such skin can be utilized effectively, there were pointed out the good function of the well-known Pirogoff and Gritti stumps, in the former of which the integument covering the stump being taken from the thick skin of the heel, and in the latter from the thick skin covering the patella; the good function of these stumps, however, as will be shown later, depends wholly upon a different principle. Furthermore, it has been repeatedly proven, that stumps in other respects well made, but covered with the thinnest and most delicate skin (*e.g.,* in one case of Bier from the thin skin covering the tendon of Achilles), will be able to withstand the greatest pressure; and in addition it has also been found that every skin, provided the function of the stump is good, will eventually hypertrophy, so as to resemble skin designed by nature for pressure. In one of my cases (amputation at the middle of the leg) the skin is so thick as to make an unsightly, but nevertheless perfect stump as far as function is concerned. We must, therefore, arrive at the conclusion that the integument is not the deciding factor.

2. *Muscles, Fasciæ and Tendons.*—Another structure which engaged for a time the attention of surgeons was the musculature covering the stump; and the theory was propounded, that a stump in order to be functionally good must be liberally covered with heavy muscles, which would act as a buffer. This gave rise to a number of operative procedures (particularly the transfixion methods), all designed with the object in view to cover the end of the stump with large and heavy muscles. The results were stumps beautiful to look at when of recent origin, but in the course of time this also proved to be futile, as it was soon found that even with heavy muscular cushions, pressure, particularly if continued for a long period, soon became unbearable; and in addition all the muscles very soon atrophied, the atrophy persisting in spite of energetic massage, the use of electricity, etc. This occurrence is well known to everybody; there is no necessity, therefore, to bring many examples; it is only lately I have had occasion to examine a stump of the thigh in an adult, the muscles of which were so atrophied that the diameter at the middle of the thigh was only two inches, and the end of the stump was so tender that the patient winced with pain at the slightest tap of the finger.

This muscular theory is disproven also by the fact that there are in existence a number of amputation methods (*e.g.,* Stephen Smith, Pirogoff) in which there is not a trace of muscle covering the end of the stump, and yet functionally these stumps are simply ideal. What has been said of the muscles is equally true of the less important structures of tendons and fasciæ. I am fully aware that the only lately Dietel (*Deutsche Zeitschrift für Chirurgie,* February, 1904), published a few good results, which were obtained by covering the stump with tendons, but my experience will not bear this out.

3. *The Nerves.*—The nerves in a stump have engaged the attention of surgeons for a very long time, and in a measure with more right than any of the structures yet mentioned, because one of the diseases to which the stumps are peculiarly liable, depends particularly upon a pathological condition of the principal nerve trunks. It has been known for a long time that nerves divided in an amputation, particularly when they become adherent to the resulting cicatrix, are very prone to develop painful neuromata, and even were the stump functionally perfect in other respects, the presence of such a neuroma would be amply sufficient to frustrate its perfect physiological function. In a majority of instances, however, the prophylaxis of such an occurrence is readily at hand, as all that is necessary is to carefully isolate the nerve trunk during the operation, to draw

it out as far as possible, and to divide it at a higher level. In a few rare instances a painful neuroma develops in spite of this procedure, and for the cure of these cases Bier has proposed a neuroplastic suture to be carried out on the principle of his osteoplastic procedure. Personally, I have also seen a few pathological stumps, which were due in part to a fault of the divided nerves, and their occasional occurrence cannot be denied, but the greatest majority is certainly due to other causes.

4. *The Cicatrix.*—It is a well-known fact that scar tissue is less resistant and more tender than normal tissue; this is very probably due to an enclosure of the finer sensory nerve endings, and their compression by the natural contraction of the cicatrix. The cicatrix was therefore looked upon as one, if not the main, cause of painful and tender amputation stumps; nor can it be denied that there were certain grounds for this supposition. Acting upon this theory, in order to avoid any exposure of the cicatrix to pressure, numerous incisions were devised, mostly of the variety of two unequal flaps; these when sutured, placed the resulting scar to one side of the end of the stump, where it naturally was less liable to pressure than if placed directly upon the end of the stump.

This, as one might say, physiological property of cicatricial tissue must and should be taken into account as far as possible in all amputations, but it should never be of sufficient importance to sacrifice any of the length of the stump to it, because it applies more particularly only to the massive cicatrices of secondary union; the non-adherent linear cicatrices of primary union either do not have this quality at all, or to so slight an extent, that for practical purposes it may be entirely disregarded. I have personally performed amputations, the stumps of which were perfect as far as end-bearing function was concerned, in spite of the fact that the scar was placed directly upon the end of the stump. We can safely say, therefore, that the presence of the scar is not the deciding factor in the proper construction of amputation stumps.

5. *The Bone and Its Periosteal Covering.*—These are the structures which I believe to be of the greatest importance, and which must be discussed at somewhat greater length. It would be altogether erroneous to believe that end-bearing stumps are an innovation in surgery; on the contrary several were known for a long time, but they were not properly interpreted. The simplest of these were the pure exarticulations; it was universally acknowledged that the exarticulation stumps formed in a pure and unadulterated fashion functionated perfectly; but they were erroneously interpreted, as on their account the theory was propounded that only such amputations were followed by a good result which were performed through the comparatively broad epiphyses. That this was an error and misleading in many ways is well evidenced by the fact that there are many amputations in which the section of bone is carried out through the broadest kind of an epiphysis, and yet the functional result is poor. And still amputations of this nature are highly commended in all text-books.

Permit me to call your attention here only to the well-known Carden amputation through the condyles of the femur. In this operation, the section of the bone is carried through the massive and broad condyles of the femur. Good function is claimed for the Carden stump, because "its extremity is well calculated for sustaining pressure, both on account of the breadth of the cut surface of the bone divided through the condyles, and from the character of the skin habituated to similar treatment in kneeling." (The Operations of Surgery, Jacobson and Steward, Philadelphia, 1902). Koenig (Lehrbuch der speciellen Chirurgie) also praises the exarticulation, but in comparing the exarticulation with the transcondyloid amputation, says that the latter often does as much as an exarticulation, as it offers the patient a point of support, upon which he can press directly with a prothesis. Both from experience and on account of theoretical reasons I would be inclined to doubt the great value of this operation. My personal experience with it is limited to the following case:

Case IX.—O. S., fourteen years of age, was admitted to the hospital May 8, 1899. Patient had a very large sacral myelomeningocele, and as a result of this was suffering from paralysis of the lower extremities, with extensive trophoneurotic ulcerations. On account of the extreme deformity an amputation at the knee was decided upon, and was performed May 22, on the left side, and June 12 on the right side, by the Carden method. Primary union resulted and patient was discharged July 26.

Patient presented himself for re-examination April 10, 1904, and I found a peculiar deformity of both thighs, inasmuch as both were rotated inward to an arc of 90 degrees. Linear scars on both amputation stumps; no pressure could be exerted on the end of the stump, on account of extreme tenderness, though it must be admitted that pain was not present.

In this case surely the function was anything but good; pressure upon the end of the stump was not born properly.

On the other hand, I may go one step further and review also the indications for this operation. I know of no disease where a Carden operation would be absolutely indicated, more particularly in view of the fact that we are in the possession of an amputation method at the knee-joint which gives the very best functional result, and which withal is safer, simpler, and consumes less time for its execution. The operation I refer to is a pure and simple exarticulation, without interfering in any way or manner with the articular surface of the femur. I have had occasion to operate but one case in this manner and I can assert without the slightest hesitation that both the primary and ultimate results were simply perfect.

Case X.—P. L., thirty-nine years of age, was

admitted to the hospital May 20, 1903, with a progressing gangrene of the foot due to arteriosclerosis. May 22 a typical exarticulation at the knee joint was performed; primary union resulted and patient was discharged cured June 4.

Contrasting the two cases just related, and for reason which will become more apparent in the course of my paper, I believe I am entitled to formulate my opinion as regards these two amputations in so far that the Carden as such should be abandoned, and in its place there should be substituted the simpler, safer and better exarticulation. (It is only proper to mention here, that the functionally perfect Gritti and Ssabanejeef operations will be discussed later.)

Another well-recognized and universally adopted method of amputation, which can be brought up to refute the theory that amputations performed through broad epiphyses are always followed by good functional results, is the Syme's amputation. As is well known, in the original Syme operation the section of the bones is carried through tibia and fibula at a level slightly higher than the cartilage covering the tibia; later modifications leave in site the cartilage covering the tibia, and saw off the two malleoli only; and good results have been claimed for this amputation. Personally, I have had no experience whatsoever with either the original Syme operation or with its later modifications, but through the courtesy of the firm of A. A. Marks, manufacturers of artificial prothesis, I have had occasion to examine a number of Syme stumps, and I have invariably found marked tenderness present. On this account and also on purely theoretical grounds I cannot agree with the views given, and instead I have devised a new amputation in the region of the ankle joint, based on a different principle, which at least in the case tried (Case VIII) has given me a perfect result; an account of it has appeared in the May, 1904, number of the *Annals of Surgery*.

In refutal of the theory of epiphyseal amputations we can also bring up the well-known Pirogoff amputation. This, as is universally conceded, forms an excellent stump, and yet its distal end formed as it is only by the posterior extremity of the os calcis, is no broader than the diaphysis of the tibia or femur. These various examples are, I believe, sufficient to prove that the theory of epiphyseal amputations is not tenable.

Another amputation which was well known, in fact so well known that it has received the rather flattering name of "amputation at the seat of election," is the one in the upper third of the leg. This amputation was particularly preferred prior to the present perfection of artificial prothesis, because the stump was bent at the knee, and the anterior surface of the tuberosities of the tibia was fitted into the socket of the artificial pegleg. In view of the fact that the stump, so bent, could very well stand the pressure of the pegleg, and never gave rise to any trouble, the theory was propounded that the stump in order to give perfect function, must be covered by skin designed by nature to pressure, and which must be in original connection with the underlying periosteum and bone. This no doubt also served as the underlying principle upon which Ssbanejeef designed his ideal and perfect amputation at the knee-joint.

But let us investigate a stump formed at the so-called seat of election; it is soon seen that the end of the stump, which after all is the point to look at, does not enter into function at all, as it is situated some distance behind the point of support; as a matter of fact this end of the stump in ninety-nine out of a hundred cases is absolutely poor, and will not stand the slightest amount of pressure; and the ability to wear with a certain amount of comfort an artificial pegleg in these cases does not depend in the least upon the stump. It is seen therefore that this theory also is untenable.

Just a word here regarding the functionally excellent Gritti amputation, as in it there are present all the conditions which are required to correspond with the theory above stated, viz., the skin covering the end of the stump is that normally covering the patella, is designed by nature to pressure, and furthermore is still in connection with the underlying periosteum and bone. It is true that this stump is perfect, but personally I believe and know that the good function of this stump depends wholly upon the patella, and I also believe that the function of the Gritti stump would be just as good if the skin covering the patella were all destroyed, and in its place, integument from the lateral or posterior surfaces would be utilized for covering the stump. The perfect function of the Gritti stump cannot be denied, but in view of the fact that an exarticulation at the knee joint is just as perfect, simpler and quicker, it is questionable whether we shall find many indications for its performance; perhaps it should be reserved for those comparatively rare cases only in which the patella is healthy, but the articular surfaces of the femoral condyles are diseased.

For a while considerable stress was laid upon the periosteum covering the bone, and numerous methods were, and for that matter still are, in vogue, which laid particular stress upon the preservation and subsequent suture of a cuff of periosteum. In spite of numerous assertions to the contrary, I have personally never seen any permanent benefit to arise from such a procedure, as, peculiar as it may appear, the periosteum so sewn over the end of a sawn surface does not form new bone, as one might be inclined to expect. I have frequently had occasion to examine stumps formed in this manner at secondary operations and with the Roentgen rays as well, but I have never seen any new formation of bone.

Let us now go backward a few years, say 1897, and ask once more, what was the state of our knowledge regarding the good function and painlessness in general of amputation stumps? We can sum up our knowledge in brief in the following: absence of pain and good function was present only (1) in all typical exarticulations, (2)

in the Pirogoff amputation, (3) in the Gritti amputation, (4) in the Ssabanejeef amputation, and (5) in the Scymanowsky amputation. This was the state of affairs when Bier began his studies upon this very important point, and the question therefore was only to find out the one common thing, the presence or absence of which is to decide the good or bad function of the stump. As a result of his studies and experiments Bier (Sammlung klinischer Vorträge No. 264) arrived correctly at the conclusion that "in none of these amputations does the bone expose a wounded surface," and in consequence he has been enabled to propound an entirely new theory regarding the good function of amputation stumps, viz., "that in no case must the bone expose on its distal extremity a wounded surface; and in order to obtain this result, it is necessary to cover or seal the wounded surface with bone covered by its periosteum, or if this be impossible, it is preferable to exarticulate."

This was the fundamental principle laid down by Bier for all amputations, and to carry it out he devised the now well recognized method, which is known as the osteoplastic amputation. This is not the place to discuss the method in detail, as it has been done so frequently that it would be merely needless repetition. The underlying principle is to form, either from the bone amputated or from a neighboring bone, a thin osteoperiosteal flap, which obtains its mobility from a hinge of periosteum; this osteoperiosteal flap is brought into correct apposition with the sawn surface of the amputated bone, and its periosteum is sutured to the opposed periosteum and to other convenient structures. If the work is done under aseptic conditions primary union usually results, and when this is the case, it has been my experience that the final outcome is perfect in every instance.

Just one word more regarding the indications for this operation; as a general rule it might be said, that it is indicated in every amputation, in the upper extremity as well as in the lower, with the exception of the following two, first, in all those cases in which the general condition of the patient demands a hasty termination of the operation, and second, in those cases in which the nutrition of the parts (diabetes, syphilis, etc.) is so poor that there is danger of necrosis of the osteoplastic flap.

In discussing the question of indication it will not be devoid of interest to critically examine my cases in this respect; both the primary and ultimate results must be accounted for. If this is done it will be seen that one case (Case III) died, that in two cases (Cases II and V) the osteoperiosteal flap had to be removed, in the remaining cases both the primary and ultimate results were ideal. In the case with the fatal outcome, death, as already stated, was due to insolation, and this occurrence could have happened just as well after a simple amputation, or any other operation; certainly blame for its occurrence cannot be attached to the particular method of operation performed.

The osteoperiosteal flap had to be removed in two cases. In Case II a Pirogoff amputation was performed at the express request of the patient for a low amputation; owing to the poor vitality of the tissues, due to an extreme endarteritis, the bone flap necrosed and had to be removed; but this is no fault of the method, an error of judgment occurred, as only an amputation at a higher level should have been attempted. In Case V a slight marginal necrosis of the bone flap took place; in due time the involved portion would have exfoliated, in no way marring the ultimate result; owing to advanced metastases it was deemed best to hasten the closure of the sinus by removing the flap.

I am firmly convinced that the osteoplastic method of amputation forms one of the greatest advances of modern surgery; and I believe it to be worthy of more extended trial than has been heretofore vouchsafed to it.

NEED OF MORE ACCURATE KNOWLEDGE IN THE DIAGNOSIS AND TREATMENT OF CHRONIC SUPPURATIVE OTITIS MEDIA.[1,2]

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THE subject of chronic aural suppuration has been suggested to the writer by the number of cases seen each year, in which the diagnosis and treatment have been matters of indifference, and in many cases the possible significance of the symptom entirely overlooked.

The importance of this condition and the early application of appropriate treatment should be fully appreciated by every practising physician. In spite of the many articles and discussions upon the subject, there are physicians who fail to appreciate the importance of aural discharge, and allow children entrusted to their care to suffer irreparable damage to an organ of inestimable value from an educational, as well as from a sociological and economical standpoint. How often, I am sorry to say, do we hear the advice given that it is nothing but a "running ear," wash it out once in a while and the child will outgrow it? *The number of cases in which the disease outgrows the patient will never be known, for I venture the opinion that many die from intracranial complications in which the chronic suppurative middle-ear disease is never recognized as a causal factor.*

Many physicians regard chronic otorrhea much too lightly, and frequently consider it a mere inconvenience, instead of giving it the proper consideration as a serious condition, from which grave complications may arise at any time.

It must be admitted that there are many cases of chronic aural discharge which pass a long life without suffering any apparent inconvenience, ex-

1 Read before the Medical Society of the State of New York, January 27, 1904.
2 Received for publication May 6, 1904.

cept from the presence of the discharge, and die from some intercurrent disease. These cases occur in every physician's practice.

On the other hand, we must not lose sight of the fact that this disease progresses insidiously, destroying the delicate structures of the middle ear, invading the bony walls, impairing their nutrition, subsequently ending in caries or necrosis. An extension to the mastoid, antrum or cells may take place, and finally a serious invasion of the intracranial contents may occur. There is no good reason to suppose that one case will pass through life without further trouble, while another, with practically the same local conditions, will develop serious complications. Until we are able to separate these cases, I contend it is the duty of every physician to bear in mind the grave consequences that follow a neglect of this condition.

It is unfortunate that these vast and destructive changes often take place without pain, and that the gravity of the affection is not always commensurate with the symptoms. When pain does supervene upon a chronic discharge it is of great significance; it is nature calling out for relief, and warning us of disastrous results likely to follow if the warning is unheeded. For a physician to stand by and wait for the catastrophe of which he has been forewarned is little short of criminal negligence. At the outset every case of chronic suppuration of the middle ear intrusted to our care should receive a most careful examination of the nose and nasopharynx to determine their condition and the possible influence of obstructive lesions in these localities. All such obstructions are now well recognized factors in the persistence of chronic ear discharge, and as influencing a recurrence. They should be removed when found to exist in either locality.

It seems almost superfluous for me to add that adenoid growths of the pharynx is a most common and fruitful cause of aural suppuration. Nevertheless, there are still physicians who will not, or at least do not, appreciate the importance of this relation, and utterly fail in the treatment of these cases by lack of a thorough investigation and recognition of the possible causal factors. It is sometimes remarkable what rapid improvement will take place in a persistent and intractable discharge by attention to this most important part of the treatment. This is especially noticeable in children and young adults.

The next important step in the investigation is to determine the location of the perforation and extent of destruction of the membrana tympani, and whether or not thorough drainage is taking place. Chronic suppurative disease in this cavity, when dependent upon insufficient drainage, should be treated on general surgical principles, the same as it would be in any other cavity of the body; that is, by free incision and removal of any obstruction so as to allow thorough drainage and promote healing. Where is there a general surgeon or gynecologist who would treat an insufficiently drained pelvic abscess discharging into the vagina by simply ordering a cleansing vaginal wash, and that without investigation to determine the source or cause of the trouble, subjecting his patient to the number of serious consequences that may follow? I venture to say there is not one who would be guilty of such lax methods in the treatment of so important a condition. There are, I am sorry to say, numberless cases of chronic aural discharge treated in just this manner; the extent and cause of the local condition not having been investigated by the attending surgeon, putting the entire responsibility upon nature and trusting to good luck that the patient may escape subsequent complications. To some this may seem overdrawn, but to those working in this field their experience, I am sure, will substantiate it as a true picture.

When we come to consider the prognosis in these cases we realize how important it is to know what structures of the middle ear are involved and the extent of such involvement. At our first examination we should ascertain the location of the perforation, if caries of the ossicles or adjacent structures exist, if polypoid degeneration is present within the tympanum, if there are cholesteatomatous changes, and, finally, if the process is limited in its destruction to the middle ear. It behooves not only every aurist, but the general practitioner as well, to appreciate the importance and significance of this knowledge as bearing upon the care and proper management of chronic ear discharge. A perforation situated high up in the drum usually signifies necrosis of the ossicles, or involvement of the attic structures and less tendency to kindly healing. Necrosis or polyps when present must be removed, and granulation tissue destroyed before palpable results can be expected. Cholesteatomatous complication or an extension of the process beyond the confines of the drum cavity, indicate a much more serious condition and call for radical interference, as these patients are drifting beyond the border line of safety into the field of meningeal complications. I ask, then, is it reasonable to suppose that chronic middle-ear suppuration can be treated intelligently without such knowledge?

Every thinking physician knows that to treat these cases empirically is not in accord with the present advanced knowledge of the pathology of disease. To persist in these lax methods is to close our eyes to the light of medical and surgical advancement, and to result detrimentally to the patients entrusted to our care. The treatment of any disease must be based upon the broad and fundamental principles of pathological anatomy. These principles, as applied to the disease in question, are of paramount importance on account of the intimate anatomical relation of the middle ear to many vital structures. When the profession as a whole begins to realize that aural suppuration means more than the mere presence of a discharge, and that patients suffering from this condition are prone to many and serious complica-

tions—then, and not until then, will chronic suppurative otitis media be treated with a full appreciation of its possible gravity.

In this paper there is no claim made to originality; it is merely the presentation of a few facts concerning the diagnosis and treatment of a disease which in many instances have been neglected, and a plea to the profession in general to attach to this disease its proper significance, and not look upon it as a condition unworthy of a most careful examination and investigation into the cause and extent of the trouble, a procedure which will manifestly give a more rational basis for treatment. It is only by keeping these facts constantly in mind and dealing with every case accordingly that we can expect a cure of a chronic otorrhea. We would be sorry to be understood as advocating radical surgical measures in every case of chronic otorrhea; but we do insist that every case should receive its appropriate treatment according to the pathological condition present, and all physicians under whose care these cases come should obtain this knowledge before attempting treatment.

The writer has purposely omitted the question of prophylaxis, for, although a very important and interesting phase of the subject, to deal with it would carry us far beyond the limits of this paper.

DEDUCTIONS.

1. Chronic otorrhea is not given the importance that its gravity demands.

2. In all cases the treatment should be based upon the pathological condition present.

3. In addition to proper attention to the nose and nasopharynx and all minor surgical procedures, appropriate treatment to the middle ear will yield good results in a large percentage of cases.

4. Where caries is limited to the ossicular chain and there are no contra-indications, ossiculectomy should be the operation of selection.

5. Cases presenting symptoms of extension beyond the tympanic cavity should be subjected to the radical operation.

INTESTINAL OBSTRUCTION FOLLOWING APPENDICITIS OPERATIONS. REPORT OF EIGHTY-SIX CASES.

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The literature on the subject of appendicitis has reached enormous proportions, and on first sight it would seem that all has been said which could be said without needless repetition. One aspect of the subject, however, has not been sufficiently emphasized. It is the disastrous number of sequelæ which may result from an appendicitis which has gone on to the formation of an abscess, either within or outside of the appendix. A partial list of those most frequently occurring is as follows: Lymphangitis, lymphadenitis, especially of the mesenteric and retroperitoneal glands; venous thrombosis of the right or left iliac and portal veins, Douglas' and tubo-ovarian abscesses, psoas abscess, lumbar abscess, perinephritic abscess, subphrenic abscess, septic hepatitis, hepatic abscess, septic cholangitis, septic cholecystitis, septic pneumonia, abscess of the lung, empyema, pancreatitis, septic ulcer of the stomach with hematemesis, fecal fistula, intestinal adhesions, bands and obstructions, post-operative hernias, ureteral obstruction, pyemia, inflammation of the parotid gland, ischio-rectal abscesses, rupture of abscesses into cecum, colon, rectum, or bladder, secondary hemorrhage from the artery of the appendix, circumflex iliac artery, or iliac vein, acetonemia, etc.

Surgeons thoroughly appreciate the dangers of waiting before operating in cases of appendicitis, and their zeal in the matter of early operation has often been wrongly attributed by their medical confrères to operative enthusiasm. Evidence, however, is rapidly accumulating to convince the most incredulous that their position is a most sound one, based on both clinical and pathological findings. In this list of sequelæ, perhaps no single one is more to be dreaded than intestinal obstruction. This condition is the result chiefly of the delay for what is commonly known as "walling off," which means the waiting for the abscess to be surrounded by adherent intestines. No one can tell when these adhesions may produce intestinal obstruction, and surely in any disease we must take into account just as much the remote results as the immediate ones. We may also say without fear of contradiction that there has been a time in every fatal case of appendicitis when an operation would have saved the patient.

In a study of 1,000 operations for acute intestinal obstruction and gangrenous hernia made by Dr. Charles L. Gibson (*Annals of Surgery*, Vol. 32, Nos. 4 and 5), he found "bands" to be the cause of obstruction in 186 cases, this being the commonest form of acute obstruction in the adult. "These were most frequently from inflammatory remains of appendiceal troubles and from the female pelvic organs. While the subject for simplicity's sake is treated under the heading of bands, it must be borne in mind that many of these are in the form of diffuse, velamentous adhesions, causing obstruction by kinking and knotting of the intestines, as well as by direct diminution of the caliber of the intestine, and strangulation of the blood-supply."

Fifty-eight per cent. of these 186 cases were in males; and the site of the obstruction was the small intestine in eighty-six per cent. of all the cases.

In taking up this subject, I shall first report *in extenso* two of my own cases, one of which had two post-operative attacks of intestinal obstruction successfully operated upon, the second case having eighteen inches of gangrenous intestine. Following this are all the cases which I have been able to find in the literature on the subject. In addition, there will be found a number of unpublished cases, occurring in the practices of various

surgeons who have been kind enough to allow me to publish them. Lastly, there will be found a general discussion of this vital and interesting topic.

E. L., female, single, Russian, cirgarmaker; admitted to the Presbyterian Hospital, September 11, 1903, with the following history: Family and previous history negative in every respect. Present trouble began two days prior to her admission, when she was suddenly seized with sharp pain in the epigastrium, accompanied with vomiting. The next day this pain localized itself in the right iliac fossa, where it became exceedingly tender. Vomiting continued occasionally with nausea until admission. Bowels moved normally. On admission, temperature was 101⅘° F.; pulse, 120; respiration, 32. Patient is pale, anemic. Whole abdomen is tender and somewhat distended, and moves but slightly with respiration. Tenderness most marked in right iliac fossa, where there is very great muscular rigidity, which makes the detection of a possible underlying mass impossible, although it was supposed to exist.

Immediate Operation (gas and ether being employed).—Intermuscular incision with blunt separation of the muscles in the direction of their fibers. Appendix found retrocecal, surrounded by a pocket containing about two ounces of thick pus, swollen to the size of one's thumb, and intensely congested. The base of the appendix was gangrenous with a perforation about half an inch from its insertion into the cecum. Double ligature of plain catgut applied to its base, which was cauterized after amputation of the organ. No irrigation used. Two small drains of gauze, wound about with rubber tissue, were passed down to the appendix site. Remainder of wound closed with catgut in layers. Time, thirty minutes. Condition postoperative, good. After the operation all the symptoms became ameliorated. Temperature and pulse gradually lowered. On September 18, eight days after operation, highest temperature 101.5° F.; pulse, 85.

On the ninth day, the temperature suddenly dropped from 101° to 97° F., and the pulse became 100. Patient complained of cramp-like abdominal pains and began to vomit. On the tenth day symptoms referable to the abdomen were better until the night of the second day of her pain, when her condition became more serious. At midnight the temperature was 96° F.; pulse, 120. The vomiting was frequent and very foul, abdomen distended, but not at all tender. Numerous high enemata failed to bring away any fecal material or gas. Early in the morning of the third day, the eleventh day after the first operation, the vomiting became fecal, entirely unrelieved by lavages, and there had been no bowel movement. The abdomen was more distended, with slight general tenderness. Vigorous peristaltic sounds could be heard all over the abdomen with the stethoscope, and there was almost no muscular rigidity. From the lack of rigidity and marked tenderness, and the presence of vigorous peristalsis, it was evident at once that we had to deal with a mechanical obstruction, and not an inflammatory one. The pulse was poor and 130.

Operation, September 21, 1903, 10 A.M. (gas and ether).—Median incision above the pubis. Much distended small intestines presented. Pads inserted, drawing the intestines over toward the left iliac fossa, so as to give a clear view of the appendix region, where it was surmised the trouble lay, and so it turned out to be; for it was seen at once that the two extremities of a single coil of small intestines were adherent to the abdominal wall in immediate juxtaposition to each other. The portion of the coil distal to the adhesion had become twisted upon itself, completely obstructing its lumen; for the portion of the intestine leading up to the point of adherence was ballooned to the size of one's arm, while the coil leading away from the adhesion was completely collapsed. As soon as the twist was undone, the gas passed on rapidly into the collapsed intestine. One extremity of the twisted coil was loosened from its adhesion to the abdominal wall, and an area on its surface, denuded thereby of its serous coat, was closed in by a Lambert suture of fine silk. The other extremity could not be loosened on account of the firmness of the adhesions, so it was left as it was. Patient in bad condition, requiring an intravenous infusion of salt solution. Rapid closure of the abdomen by silkworm-gut sutures passed through all the layers. Five dejections followed the operation the same day without any artificial assistance. Vomiting ceased a few hours after the operation. Pulse the next day 100 and the patient very comfortable, the temperature being 100° F. No distention.

The subsequent course was uneventful until the midnight of October 6, 1903, being the twenty-fifth day after the first operation, and the fifteenth day following the second one. She then began to vomit large amounts of undigested food. Vomiting continued the next day, unrelieved by repeated lavage. Enemata failed to evacuate gas or fecal matter. During the day the abdominal signs developed exactly as they had in the previous attack of obstruction.

Operation, twenty hours after the onset, October 7, 10 P.M.—Previous median wound reopened without cutting. Distended small intestine presented. A less distended loop was followed down in the direction of increasing distention and resistance until a point was reached where the coil was tightly adherent to a neighboring loop. This had produced a kink in the afferent loop, causing absolute occlusion of its lumen. Beyond this adhesion, the intestine was collapsed. The adhesion between the loops was separated, leaving a raw area on each loop the size of a quarter of a dollar. Gas passed immediately onward into the collapsed bowel. The raw areas on each loop were covered in with interrupted Lembert sutures of silk. No further raw areas were discovered after search. Relief was almost immediate after the operation. She vomited twice very foul material. There were three stools in the course of the following fifteen hours, and all pain ceased. Complete con-

valescence followed without a setback. The patient left the hospital on November 8, 1903, fifty-eight days after the first operation, forty-eight days after the second one, and thirty-two days after the third operation. On December 26, 1903, the patient was seen, and said she was in the best of health and had no digestive disturbances, bowels constipated. She was instructed to return immediately to the hospital on the appearance of any symptoms of obstruction.

The second case is as follows: Mrs. N. C., aged twenty-eight years; admitted to the Presbyterian Hospital, October 3, 1903, 11 P.M., with the following history: Three years ago operation in Philadelphia for appendicitis, two rubber tubes being left in as drains. Never any other serious illness. Seven weeks previous to admission, miscarriage, for which curettage was performed. Convalescence uneventful.

Three days before admission patient was seized with severe burning pain in abdomen, which was not localized but general. It was often very colicky. Later it seemed to be most intense in the lower median part of the abdomen, where it became very tender to the touch. Prostration soon became marked. She vomited constantly, and for four days there had been no movement of the bowels nor passage of flatus. Examination elicited the following points: Hippocratic facies marked, tongue dry, foul, coated with brown fur. Odor of breath foul. Temperature, 104.8° F.; pulse, 140, poor quality but regular. Heart and lungs normal. Abdomen distended and moved scarcely at all with respiration. Over the appendix region is a four-inch scar, evidently the result of a suppurating wound. Great tenderness over whole of lower half of abdomen, most marked in right quadrant, where there seemed to be a soft, semi-elastic mass, the size of a grapefruit, very indefinite in its outlines but extending over to and beyond the median line, and down behind the pubis. There was a tympanitic note over the whole of the abdomen, and over the mass. Very faint peristalsis heard over the abdomen with stethoscope. Vaginal examination elicited in the right fornix a tender, soft, rather elastic, indefinite mass bulging down behind the uterus. Profuse leucorrheal discharge. There was evidently peritonitis present with intestinal obstruction, the etiology of which could not be determined. It was thought possibly to be due to an appendix abscess which had ruptured, but the more probable diagnosis was ruptured pyosalpinx.

Operation, October 3, 1903, 1 A.M. (gas and ether being used).—Three-inch median incision above the symphysis. Free, foul-smelling purulent fluid escaped on opening the peritoneal cavity. Omentum adherent to uterus and tubes. On separating this, a coil of distended, blackish, small intestine presented, the two extremities of the coil leading over to the appendix scar, where they were adherent to each other and to the anterior parietes. About one and a half inches from the adherent point the coils had twisted about each other, producing an evident obstruction not only to the passage of the intestinal contents, but also to the vascular circulation; for, on attempting to lift up the gangrenous intestine, this broke away from its mesenteric attachment, practically of its own weight, and throughout the whole extent of the gangrenous area. There was no perforation anywhere, and the gut was distended. It lay almost wholly in the pelvis, the walls of which were covered with a foul exudate, in places necrotic. Resection of the gangrenous gut was performed as quickly as possible with a medium-sized Murphy button, and without the escape of any of the intestinal contents. Measurement of the part excised showed it to be eighteen inches long. The excess of mesentery was reefed with catgut. Peritoneal cavity irrigated thoroughly with profuse quantities of hot saline solution. No trace of the appendix was seen at any time of the operation. Two large cigarette drains left in the lower angle of the wound, which was hastily closed with silkworm-gut sutures, passed through all the layers of the abdomen by means of a handle needle. Patient in bad condition, making necessary a saline intravenous infusion of 1,500 c.c. at a temperature of 110° F. on the operating table.

Patient's condition remained grave after the operation, responding very slightly to all forms of stimulation. In the first twenty-four hours three hypodermoclyses of 1,000 c.c. of saline solution were given. There were also in this time four dejections as the result of turpentine enemata. Repeated lavage allayed the vomiting. Temperature next day was 105.5° F.; pulse, 140 and weak. Nutrient, stimulating enemata given. Patient died on the fourth day after the operation of progressive rapid sepsis, due to the purulent condition of the pelvic walls.

The following case occurred in the service of Dr. F. Tilden Brown, to whose kindness I am indebted for the privilege of recording it.

P. M., female, aged twenty-nine years; clerk. Four or five attacks of slight appendicitis. Admitted to hospital seventeen hours after beginning of present attack, on June 21, 1903, with a temperature of 101° F.; pulse of 90. Abdomen rigid all over, but this very marked in the right iliac fossa, where there was exquisite tenderness, but no mass. Intermuscular operation was at once performed. The appendix was intensely inflamed, and there was an ounce or two of pus about it. It was removed, and two small cigarette drains were left down to the stump, the wound being largely closed. Convalescence was smooth until the twentieth day, in the morning, when she was allowed out of bed for the first time. In the afternoon of that day, July 11, she complained of considerable pain in the abdomen, and vomited that evening and night several times. The next day the vomiting continued, and in the evening became fecal. No movement could be obtained by enemata and she became distended.

Operation at Midnight, July 12, 1903, two days after the onset of the first symptom (gas and ether).—Vertical incision through the right rec-

tus, whose muscular fibers were bluntly separated at the level of the naval. Serous fluid escaped from the peritoneal cavity, and there were many adhesions in the neighborhood of the cecum. A band of omentum was traced through the peritoneum and found attached to the muscles in the old wound. The intestines had evidently looped over this so that a volvulus had formed. The band was cut and the twist reduced, air passing immediately into the collapsed portion of intestine. Closed in layers, a small drain being left in the lower angle. Patient had a good bowel movement the next day, and all her symptoms subsided. She went home August 15, 1903, fifty-five days after the first operation, and thirty-three days after the second one.

We may divide the cases of obstruction occurring after an operation for appendicitis into three classes: 1. Immediate. 2. Early. 3. Late obstruction. The first class, immediate obstruction, comprises those cases in which obstruction comes on immediately after the operation, from a few hours to a couple of days. The operation is in many cases never quite recovered from before the symptoms of obstruction gradually present themselves. The obstruction here is usually due to intestinal paresis alone, caused by a local or general peritonitis; this paresis, however, may be accentuated by the effect of adhesions. Rarely at this time do we get the mechanical effect alone of adhesions. In some cases before the primary operation the arrest of the passage of the fecal material and of gas may project so prominently in the foreground that the erroneous diagnosis of intestinal obstruction alone may be made, and the appendicitis be overlooked.

The second class, "early" obstruction, is that occurring a number of days or weeks after the primary operation, before the convalescence from this is complete, usually before the complete healing of the wound. It may be due to two main causes: (*a*) The development of secondary abscesses in remote portions of the abdomen; the actual pressure of such an abscess may of itself produce obstruction, or the adhesions about such an abscess may produce angulation of the gut sufficient to obstruct its lumen. The simple opening of such an abscess has often resulted in the immediate subsidence of the obstructive symptoms. (*b*) The second cause in this class, and the more frequent, is that due to mechanical obstruction, produced by adherent loops causing constricting bands about each other, or resulting in angulation, volvulus, internal hernia, etc. It is not a question of present peritonitis.

The third main class, "late" obstruction, may come on weeks, months, or years after the primary operation, or even after an antecedent appendicitis, which has not been operated upon. During this period there may be perfect health without digestive disturbance of any kind, or there may be more or less stomach difficulty, and attacks of constipation. The causes of obstruction in this class are the same as under (*b*) in the second class.

The symptoms of immediate obstruction, arising as they do within a few hours or a couple of days after the primary operation, are often puzzling, for our treatment will depend on whether it be produced by paralytic ileus, due to peritonitis, either local or general, or to a mechanical obstruction, hence the importance of a correct diagnosis. In paralytic ileus we are apt to hear much decreased, or no peristalsis over the abdomen with the stethoscope; in mechanical obstruction it is strong and colicky. In the former we may get a history of the passage of some gas; in the latter the obstruction is complete. In the former, pain may not be great; in the latter it is violent and colicky, and not localized. Collapse comes on early in the latter, and is severer. Vomiting is not so apt to be stercoraceous in paralytic ileus and it is apt to be less projectile, less frequent, and less intractable. Muscular rigidity is much more pronounced and general in peritonitis than in mechanical obstruction. In the former the symptoms of progressive sepsis are more in evidence than in the latter.

The diagnosis between these two conditions, peritonitis or obstruction, is fraught with the greatest difficulty in the majority of cases, and is the cause of much anxiety to the surgeon. It is unquestionably true that many cases of mechanical obstruction have died unrecognized under the name of peritonitis. When in doubt, wait for a time the result of medicinal measures, *i.e.,* wash out the stomach with warm salt solution, putting in through the tube one drachm each of Rochelle and Epsom salts, which dose should be administered every hour until a result is obtained or a diagnosis is reached, employ high enemata containing olive oil and turpentine, or a solution of alum, which is often very efficacious, and give two or three hypodermics of atropine gr. $\frac{1}{200}$ at intervals of two hours. Atropine is given with the idea that it increases peristalsis and contracts blood-vessels, but it is useless, of course, if strangulation exists. Gentle abdominal massage may also be used. If these measures are not quickly followed by the passage of flatus or feces, and the possibility of mechanical obstruction still exists, operation had better be performed at once.

It must not be forgotten that mechanical obstruction and intestinal paresis (peritonitis) may coexist at the same time.

Operation being decided upon in immediate obstruction, what procedure is best? The mortality of these secondary operations, following closely a primary one, is frightfully high, due to the patient's prostrated condition. The quickest procedure, therefore, is urgently called for. A secondary abscess at a distance from the appendix site would call for an incision over its location. Barring this complication, we may reopen the wound, or make a median incision below the navel. Is the patient in a low condition, then the former procedure may offer the greatest hope. A loop of distended small intestine presenting in the wound is incised. If our opening be above the site of the obstruction, then the quantity of gas

and feces evacuated will be large, and can be increased by pressure on the abdomen, while neighboring coils of small intestine will collapse. In case our opening be below the obstruction, then we shall have to make another puncture in another loop. This procedure may likewise help in ileus depending on peritonitis alone.

In case the patient is in better condition, it may be wiser to quickly make a median incision in order to more thoroughly search for the obstruction. Evisceration may not be practised on account of increasing the shock. Peritonitis requires copious flushing of the abdomen with hot normal salt solution. Bands, etc., require appropriate treatment, while we may at times have to content ourselves with making an artificial anus, particularly in cases with general, extensive adhesions. Speed is a *sine qua non*.

2. "Early" obstruction as a rule presents little difficulty in diagnosis. The patient is convalescent from the original appendicitis operation and on regular diet, when there is a sudden attack of sharp, colicky, abdominal pain, with vomiting which is intractable, soon becoming stercoraceous. This colic is often due to error in diet, causing acute attack of indigestion. Obstruction of the bowels is complete, no flatus even being passed. The abdomen is not tender, nor is there much muscular rigidity, and this is true likewise when later the intestines beneath become distended. Rigidity only is present when peritonitis comes on. No tumor is palpable. Peristalsis is violent above the obstruction, and is heard loudly with the stethoscope. Shock is a prominent symptom, and the patient's condition becomes alarming, pulse rapid and weak, face very drawn and anxious, cold perspiration. The temperature drops to subnormal. The symptoms also may be subacute, due to the more gradual contraction of adhesions, or they may be coincident with the development of a secondary abscess at or far from the appendix site.

After a possible initial cathartic, no more should be given by mouth. Massage here is often very efficacious, because the adhesions are soft and yielding. High enemata, etc., should be tried, but as soon as a diagnosis is made, no time should be lost before proceeding to an operation, without waiting for the subsidence of the shock, which latter may never occur. A median incision is in order. A distended loop of intestine is sought for, and followed in the direction of increasing distention and resistance, until the obstructing cause is discovered, and appropriate treatment applied. Practically the small intestine is the one always obstructed, and the seat of the difficulty will be found in the right iliac fossa in the great majority of the cases. Secondary abscesses may be found buried deep in a mass of adherent intestines, necessitating drainage. Kinks are untwisted and angulations straightened, etc. Raw areas resulting from the separation of adhesions are buried under Lembert sutures, or covered with Cargile membrane. Gangrenous areas in the intestine resulting from volvulus, internal hernias, etc., are excised, and the ends either left in the wound, or brought together with a Murphy button. The abdomen is closed with the cavity full of salt solution, which may prevent the re-formation of some few adhesions. If the whole extent of the intestines is a great mass of inextricably agglutinated intestines, our only resort is to make an artificial anus.

Two measures besides high enemata, etc., may be employed to ward off an impending attack of mechanical obstruction, if used very early. One is vigorous abdominal massage. It is a very valuable procedure, and certainly has not received the attention it merits. The second is change in position of the patient, not only from side to side, but also particularly by elevation of the hips—this may straighten out a beginning flexure, and may change the direction of the peristalsis so that it will not impinge on a fixed point (Morris).

3. "Late" obstruction, as we have seen, may occur years after an appendix operation, so long previous that its connection with the present attack may not be thought of. It may occur also a long time after an appendicitis which has not been operated upon, for surely the adhesions may occur just the same without an operation as with one. This latter fact needs decided emphasis. The symptoms may be acute or chronic in character. The acute attack comes on without a premonition in a perfectly healthy person, either without any appreciable exciting cause, or after violent exercise, or a heavy, indigestible meal. It begins as a violent colic which yields to no treatment. Peristalsis is exaggerated, but ineffectual, as no gas nor feces are passed. Vomiting comes on at once and is persistent, sooner or later becoming fecal in character. Temperature remains normal for some time (may be subnormal from shock) until peritonitic inflammation arises. Shock is often a pronounced symptom, and the pulse gradually rises and becomes weak. The abdomen progressively distends. There is but slight muscular rigidity until peritonitis comes on. Palliative measures, such as enemata and massage, are less efficacious because the adhesions are firm and well organized.

The diagnosis soon becomes clear, and no time should be lost before operating. A median incision should be made below the navel and the obstruction relieved by adopting measures appropriate to the conditions found.

The chronic type of "late" obstruction has a more gradual and progressive course. Following the original appendicitis, whether operated upon or not, there may be a period of longer or shorter duration of perfect health, or the patient may complain of digestive disturbances, particularly from the side of the bowel activity. Constipation becomes more and more marked, relieved with greater and greater difficulty by cathartics and enemata. There may be slight attacks of intestinal colic with nausea. A diagnosis may be made at this stage, and that much to the patient's advantage. It would seem at this stage in some cases that abdominal massage and electricity

might avail to ward off complete obstruction. Careful watching of a patient with a history of appendicitis and with the above symptoms will enable the right diagnosis to be made. Oftener, however, that of intestinal indigestion is made, and the patient is plied with drugs, and put upon a rigid diet, with the result of causing loss of flesh and strength often of extreme degree. Chronic obstruction is caused by the gradual contraction of adhesions between two loops of bowel, or about a loop, or the gradual or periodic forcing of a coil beneath a band, etc., resulting in a progressive diminution in the caliber of the bowel. Persistence of these symptoms urgently requires operative interference. Sudden complete obstruction may come on at any time without obvious cause, or determined by an over-hearty meal or violent exercise. The symptoms then of acute complete obstruction are in full evidence, requiring active operative treatment.

Kocher, in the article cited later, lays down the following propositions: 1. The chief danger in each case of ileus rests upon the disturbances in circulation in the bowel-wall and its consequences, namely, venous hyperemia leading to hemorrhages and infarcts, edematous infiltration and the collecting of decomposing fluids in the intestine, injury and exfoliation of the epithelium and the consequent permeability of the bowel-wall for the passage of ferments, toxic substances, and bacteria.

2. This permeability leads, on the one hand, to general intoxication and infection, and, on the other, to local inflammation of the bowel-walls, necrosis of the same with ulcerations, perforation, and peritonitis.

3. The circulatory disturbances in the intestinal walls are caused by pressure from without upon circumscribed portions of the wall, and also by pressure upon the mesenteric vessels, due to strangulation by bands, internal hernias, volvuli, invaginations, etc.

4. Not less dangerous circulatory disturbances are caused by pressure from within, resulting from the stagnation of the intestinal contents, increased transudation and secretion above the obstruction, and the consequent overstretching of the bowel-wall.

5. In every case of ileus the immediate removal of the circulatory disturbances of the bowel-wall is indicated. This is accomplished, not only by removal of the extra-intestinal pressure, but also by doing away with the intra-intestinal stretching —the first can only be accomplished by means of a laparotomy,[1] the second without such a procedure, as by the formation of an artificial anus.

6. The slow development and chronic course of an ileus in no way restricts the absolute validity of the aforesaid indication, since the severest forms of ileus begin slowly, and the chronic forms may suddenly become acute.

7. The operative treatment of each case of ileus should be considered from the first moment. The non-operative treatment is suitable simply for those cases of obturation and dynamic ileus in which a strangulation ileus can surely be excluded.

8. The removal of the obstruction to the intestinal contents is desirable, but the removal of the circulatory disturbances in the bowel-wall is an absolute necessity of any operative procedure. Since the first indication in all forms of ileus is adequately met by a laparotomy, this is to be preferred in all forms in the beginning stages. In the late stages of obturation and paralytic ileus, the palliative operation (artificial anus) is indicated.

9. The previously bad prognosis of the operative treatment of ileus is exclusively caused by the too long delay in the carrying out of the operation, resulting in the gangrene of the wall, due to extra-intestinal pressure, or intra-intestinal stretching from increasing decomposition of the bowel-contents.

10. On account of the frequent uncertainty of the diagnosis in the early stages, a satisfactory recovery can only be expected by means of the radical operative treatment of every patient in whom there is a well-founded suspicion that a mechanical obstruction exists.

We may divide the cases with reference to the previous operation as follows:

1. Those in which the ileus occurs at the site of the previous operation.

2. Those in which the ileus occurs independent of the site of the previous operation, or afar from it, and only being indirectly due to it.

3. Ileus where no lesion can be found, *i.e.*, paralytic ileus.

Tavel, in a very elaborate and instructive series of articles (*Revue de Chirurgie*, October, November, December, 1903) on ileus in general, with particular reference to the diagnosis of the seat of the occlusion, gives the following symptoms of occlusion in the various regions of the intestinal canal:

1. *Pyloric Occlusion.*—The vomiting contains food with mucus sometimes mixed with blood, but without bile. The vomiting is no more in amount than is swallowed. There may be a few infrequent stools, and there is some passage of flatus. Pain is located in epigastrium and back. Resistance in pyloric region. Distention is local, limited to the outlines of the stomach, and does not fill up the whole epigastric region, as in duodenal occlusion.

2. *Duodenal Occlusion.*—Vomiting of food with or without bile and pancreatic juice. It is extremely abundant, and the patient rejects much more than is swallowed. From the stomach with the tube large amounts of bile and pancreatic juice can be obtained. The passage of feces and gas are infrequent, or completely absent. General meteorism of the epigastric region. Retraction of the subumbilical region.

3. *Ileo-jejunal Obstruction.*—Vomiting at first is mucus with food, mixed with bile, then consists of the contents of the upper part of the small intestine, becoming later fecaloid. Stools and gas

[1] By this Kocher evidently means the thorough searching for the cause itself of the obstruction.

almost totally absent. Distention is pronounced occupying the middle portion of the abdomen, the course of the colon being less distended or flat.

4. *Ileo-cæcal Occlusion.*—Vomiting more infrequent, and coming on later than in the previous variety and is fecal. Stools and flatus entirely absent. Distention the same as in the previous form and without pushing up of the liver or thoracic organs. Tenderness localized in the ileocecal region, and, in most of the cases, tenderness of the right pelvic wall by rectal or vaginal examination.

5. *Occlusion at the Hepatic Flexure.*—Vomiting appears late, and is fecal; can entirely fail. Stool and flatus absent. Distention pronounced, particularly of the ascending colon, with pressing upward of the liver and diaphragm. Tenderness marked in the region of the hepatic flexure. High enemata well retained. Tumor may be present.

6. *Occlusion at the Splenic Flexure.*—Vomiting much later, may be wanting. No passage of gas or feces. Distention very marked, particularly of the transverse and ascending colon, producing pressure upward of the diaphragm. Tenderness most marked in the left hypochondrium. High enemata not so well retained. Tumor may be present.

7. *Obstruction at the Sigmoid.*—Vomiting very late or absent. No stool or gas passed. Meteorism very pronounced. Whole colon distended. Pushing upward of the liver and heart, resulting at times in the disappearance of the dulness of these organs. No high enemata possible. Low ones fairly retained. If obstruction be situated in the iliac part of the sigmoid, abdominal palpation may elicit it, in the pelvic portion rectal or vaginal examination may be necessary to determine it.

8. In colon obstruction as distinguished from ileo-cecal, the large size of the tumor which may be present is to be noted, both palpable and percussible, and sometimes visible in its contour through the abdominal walls. In addition it is to be remarked that in the purely mechanical period there is usually no vomiting. This comes on when peritonitis sets in, *i.e.*, in the terminal stage. There are two methods which may help in the diagnosis of the seat of the occlusion when in the colon: 1. Insufflation of the colon with air producing tympanitic note and metallic tone in those points where it did not exist before. 2. Method of Treves of introducing water into the colon and progressively percussing the point of advancement of the fluid which will be arrested at the seat of obstruction.

(To be Continued.)

Urotropin in Scarlet Fever.—Urotropin is recommended highly as a preventive of nephritis in scarlet fever by D. BUTTERSACK (*Deutsch. Arch. f. klin. med.* Vol. 80, Nos. 3 and 4). If given in doses of 0.05 to 0.5 grams three times daily or twice as much of the citric acid compound, the drug is absolutely harmless, even where some renal irritation is already present. If not given throughout the entire course, it should be administered with the appearance of the first trace of albumin.

ASEPTIC CATHETERIZATION OF THE URINARY PASSAGES.[1]

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AND
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IN treating the subject of aseptic catheterization we must consider the sterilization of catheters, the preparation of the urinary canal, and the introduction of the instruments in an aseptic manner.

As metal catheters can easily be rendered aseptic by boiling, nothing further will be said of them. More difficult is the sterilization of flexible catheters, the majority of those in use being made either of soft or hard rubber, caoutchouc, or woven cotton and silk.

The literature of the last ten years is replete with publications of experimental work on the sterilization and preservation of these instruments. Aside from boiling, most of the methods recommended by various authors require expensive and complicated apparatus, which are not available to the average practitioner and out of the question for patient's use. We therefore conducted our experiments with the view of finding the simplest method of sterilization with the least impairment to the instrument. During our work we found that instruments infected with colon or mixed cultures from an infected bladder were more difficult to sterilize. It was also noticed that if the instruments were allowed to dry a day or two, a longer time was necessary for sterilization. We will here give briefly a few of our experiments with these instruments.

(A) SOFT RUBBER CATHETERS.

1. Catheter infected with colon; boiled three minutes; growth.

2. Catheter infected with colon; boiled five minutes; no growth.

3. Catheter passed into infected urethra and dried twenty-four hours; cut into three pieces: (*a*) Washed in soap and water; boiled three minutes; sparse growth. (*b*) Unwashed; boiled three minutes; growth. (*c*) Control; growth.

4. Retention catheter that had been in an infected bladder twelve hours; dried twenty-four hours; cut into four pieces: (*a*) Washed; boiled five minutes; no growth. (*b*) Unwashed; boiled five minutes; no growth. (*c*) Ends clamped so that boiling water could not enter the lumen; boiled five minutes; growth.

5. Catheter infected with colon; washed; exposed to formalin fumes thirty minutes; no growth.

6. Catheter infected with mixed culture; washed; exposed to formalin fumes thirty minutes; no growth.

7. Infected retention catheter; cut into two pieces: (*a*) washed; dried; exposed to formalin fumes thirty minutes; no growth. (*b*) Un-

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washed; dried; formalin fumes thirty minutes; growth.

The apparatus used for sterilization with formalin consisted of a long glass jar, the open end of which was closed by a hollow metal stopper surrounded by rubber; the bottom consisted of a thin piece of copper. A formalin pastil was placed in the stopper and gentle heat applied (110 degrees to 115 degrees F.) for about fifteen minutes, or until the tablet was entirely disintegrated.

8. Infected retention-catheter; placed in Kutner's sterilizer three minutes; growth.

9. Catheter infected with colon; Kutner five minutes; growth.

10. Mixed infection; Kutner ten minutes; no growth.

The Kutner apparatus consists of a metal chamber surrounded by a water-jacket, in which steam is generated. The steam passes to the top of the apparatus, from which catheters are hung, then through the lumen of the catheters into the central chamber.

11. Catheter infected with mixed culture; washed and immersed in bichloride solution, 1:500, for fifteen minutes; growth.

12. Same as No. 11: (*a*) Thirty minutes; no growth. (*b*) Unwashed; thirty minutes; no growth.

13. Catheter infected with mixed culture; washed thoroughly in soap-spirits and running water; immersed in soap-spirits for fifteen minutes; growth.

(B) SILK-WOVEN AND HARD-RUBBER CATHETERS.

We repeated the same experiments as outlined under (A), and obtained practically the same results as regards sterilization.

(C) URETER-CATHETERS.

1. Catheter infected with colon; boiled three minutes in water; growth.

2. Infected with colon; boiled five minutes; growth.

3. Infected with colon; washed; formalin fumes fifteen minutes; growth.

4. Infected with mixed culture; soaked in five per cent. carbolic solution thirty minutes; growth.

5. Infected with colon; Kutner five minutes; growth.

6. Mixed infection; boiled in ammonium-sulphate solution four minutes; growth.

7. The same experiment as in No. 6; boiled five minutes; no growth.

We also experimented with various solutions of bichloride of mercury, carbolic acid and hydrochloric acid, etc., but found them unsatisfactory and unreliable for sterilization purposes.

Some of the methods, although safe as regards sterilization, cannot be employed because they proved to be too destructive to the instruments. Soft-rubber catheters stood boiling in plain water for five minutes for six successive days, and then became rather too soft for further use. Much better results in regard to their durability were obtained by boiling in a concentrated sodium-chloride solution. Silk- and cotton-woven catheters after one boiling in plain water showed blisters and small cracks in the varnish coating. They also became too soft for further use. While soft-rubber catheters did not do well in a saturated solution of ammonium-sulphate, we found that the cotton- and silk-woven, as well as the hard-rubber instruments, survived longer if boiled in that solution than in any other. They will stand, as we found, ten successive boilings of five minutes each, if put in the boiler thoroughly wrapped in gauze or a towel.

If several instruments have to be sterilized at the same time, they must be wrapped in a towel in such a manner that the surface of each instrument is entirely covered by part of the towel and does not come in contact with the neighboring catheters, or the sides of the boiler. In wrapping ureter-catheters into a towel, particular care must be taken that no part of the same ureter-catheter comes in contact with another part.

After boiling in the ammonium-sulphate the catheters must be thoroughly rinsed in sterile water to free them from the crystals of ammonium sulphate.

Steam sterilization, either by the autoclave or Kutner apparatus, is as injurious to flexible instruments as boiling. Although varnished instruments do not crack or blister so readily, after three of four steamings they generally become too soft for further use.

Sterilization by formalin is the least destructive, but as only the surface of the instrument is sterilized the utmost care must be taken that it is thoroughly washed and dried before being exposed to the fumes. Catheters of small caliber, as ureteral instruments, soon become clogged up by deposits within the lumen. The length of time needed for sterilization (at least half an hour), and the fact that the whole process of sterilization must be constantly watched, are serious obstacles to the use of formalin by the busy practitioner.

As the cystoscope is a means of ureter catheterization, we next experimented with its sterilization, which we found a more difficult task. The cystoscope cannot be boiled, for, as Casper points out, the prism lies in a metal casing, surrounded by cement. The connection between metal and glass does not permit of heating, as the expansibility of these materials is different. Besides the material used for cementing, the prism possesses a different expansibility, so that the prism will become loosened by frequent boiling and water may enter. The reflecting surfaces of the prism also suffer from heating, and the lenses become more or less opaque from moisture being deposited as soon as the instrument begins to cool off.

In a recent publication Casper describes the

following method for sterilizing cystoscopes: The non-removable parts of the instrument are rubbed for three minutes vigorously, especial attention being paid to the crevices and edges about the lamp and prism. The instrument is then snugly wrapped in gauze previously soaked in soap-spirits, in which it remains until ready for use. The removable metal parts are boiled five minutes. We experimented with this method in the following way:

1. Cystoscope infected with mixed culture and dried twenty-four hours; rubbed three minutes with separate pieces of cotton soaked in soap-spirits; washed in sterile water and plunged in bullion tube; growth.

Soap-spirits are made according to the following formula: Thirty parts alcohol, 17 parts H_2O, 7 parts KO, 6 parts olive oil (Gerson).

2. Same as in experiment number 1, except it was rubbed for five minutes; growth. Soap-spirits made according to formula of Hebra.

3. Same as in experiment number 1; growth. Soap-spirits made according to the formula of German pharmacopœa, which contains two parts of a high-grade oil-soap, two parts of rose-water and three parts of alcohol. It can easily be prepared by the physician himself and used in large quantities, as it is inexpensive.

4. After rubbing the instrument with soap-spirits for four minutes, it was wrapped in gauze soaked in soap-spirits, and allowed to remain twenty-four hours; growth.

5. Cystoscope infected with a mixed culture and dried twenty-four hours; washed in soap-spirits and warm water; rubbed with soap-spirits two minutes, then with alcohol for one minute; washed in sterile water and plunged in bullion; no growth.

6. Proceeded in the same way as in experiment 5, and then wrapped in gauze previously soaked in soap-spirits, in which it was allowed to remain four days; washed in sterile water; no growth.

The best results with the soap-spirits method were obtained if the gauze or towel used in wrapping the instrument was closely woven. If sterilized catheters, cystoscopes, etc., are snugly wrapped in closely woven towels, we are able to keep them in a sterile condition for quite a number of days (at least five days). The soap-spirits on drying forms an air-tight covering around the instrument by filling the meshes of the towel with soap. We lay stress on the fact that soap-spirits after the formula of the German pharmacopœa is to be used for soaking the gauze or towel, as soap-spirits prepared in other ways do not form the essential impermeable covering.

Cystoscopes can also be sterilized with formalin-gas without injury if the temperature in the chamber in which they are to be sterilized is not raised above 110 degrees or 115 degrees F. For this purpose we constructed an apparatus in the following way: A glass tube an inch and a half in diameter and about fourteen inches long is fitted with two stoppers. The one at the top consists of a cork with a perforation which allows the passage of the instrument as far as the ocular. The lower one consists of a hollow metal chamber surrounded by rubber, the bottom of which consists of a thin piece of copper. The formalin-powder or tablet is placed in the metal chamber and gentle heat applied. Here as in the sterilization of the catheters the instrument must be washed in soap and water and dried before exposing it to the formalin. Here are the results of some of our experiments with this apparatus.

7. Cystoscope infected with mixed culture and dried twenty-four hours; placed in formalin-chamber and gentle heat applied for fifteen minutes; washed in sterile water; plunged in bullion; growth.

8. Same as in experiment 7, but allowed to remain thirty minutes; growth.

9. Cystoscope infected with mixed culture and dried twenty-four hours; washed in soap-spirits and water and dried; placed in formalin-chamber and gentle heat applied for twenty minutes, and then kept in the apparatus ten more minutes; washed in sterile water; plunged in bullion; no growth.

Although the formalin method seems to possess a higher degree of safety as regards sterilization, still its application for general use will be marred for the same reasons stated above, requiring too much time and constant watching during the process of sterilization. We are therefore pleased to be able to recommend, from our work, the method as described in experiment 5 as the simplest and at the same time a safe procedure for sterilizing cystoscopes.

As to the question of keeping catheters, cystoscopes, etc., aseptic after sterilization, we found that the many devices, tubes, jars, designed for keeping catheters sterile, in the majority of which this is accomplished by means of a formalin pastil, unsafe. In order to keep instruments sterile for a reasonable length of time we recommend wrapping them tightly in a closely woven sterile towel, wet with soap-spirits made according to the German pharmacopœa.

As regards the introduction of instruments in an aseptic manner, it is a well-known fact that even the healthy urethra harbors various organisms, but it is doubtful if they are capable of infecting the mucous membrane of the bladder. Before introducing an instrument the meatus should be carefully sponged off with alcohol or a sublimate solution. Although it is impossible to free the urethra of micro-organisms, many authorities recommend, as a matter of precaution, the flushing of the urethra with sterile water or a solution of boric acid before instrumentation.

Another point is the choice of a lubricating agent. Oil can be sterilized by boiling, but this is a slow and dangerous procedure and the oil

soon becomes rancid. It cannot be used for lubricating cystoscopes as it blurs the optic; the same is true of vaseline. Both oil and vaseline form a tenacious coating on the instrument which cannot be easily removed in future sterilization, and, according to Casper, favors the lodging of infecting bacteria on the surface of the instrument. For this reason patients should be especially warned against the use of these lubricants.

Of late years we have used glycerin almost exclusively, the sterilization of which is unsatisfactory. Its great disadvantage, though, is that it is not a good lubricant and of no value where catheterization is difficult. More satisfactory is a combination of glycerin, tragacanth and water as originally recommended by Guyon and Kraus. Casper added cyanide of mercury to this combination in order to make it antiseptic. Culture tests made by him with this lubricant containing cyanide of mercury in a strength of 1:500 proved it to be antiseptic. The formula is tragacanth, 3.0; aq. destil., 100.0; glycerin purissim, 20.0; hyd. oxycyana, 0.246. Our experiments concur with those of Casper. It can be used for lubricating cystoscopes, as it dissolves readily in the bladder fluid, and therefore does not blur the optic. It is a good lubricant and is non-irritating. Being semi-solid, it can be kept in collapsible tubes, which facilitates its use. Care must be taken in its preparation, however, as some of the first tubes we obtained were very unsatisfactory.

In conclusion, we will briefly summarize those methods of sterilization which have proved to be safe and simple:

a. Soft-rubber catheters are rendered sterile by being boiled five minutes, preferably in sodium-chloride solution, care being taken that the solution fills the lumen of the catheter. As a matter of precaution the catheter should be washed with soap-spirits and running water after use.

b. Hard-rubber and silk- and cotton-woven catheters should be boiled five minutes in a saturated solution of sulphate of ammonia. Each instrument should be wrapped separately in gauze or a towel, or if several catheters are to be sterilized, in such a manner that their surfaces shall not come in contact with the sides of the vessel or other catheters.

c. Ureter-catheters can be folded and wrapped in a towel so that their surfaces are kept apart, and boiled for five minutes in a saturated solution of ammonium sulphate.

d. Cystoscopes should be sterilized by first washing them in soap-spirits and water, then vigorously rubbing them for two minutes with two different pieces of gauze or cotton, wet with soap-spirits, and then with alcohol for one minute. The channel for the ureter-catheter can be cleansed out by means of a brush, such as those used for cleansing pipes, first brushing with soap-spirits, then with alcohol.

e. Instruments can be kept aseptic if they are snugly wrapped in a piece of gauze or towel wet with soap-spirits.

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VALUABLE SUGGESTIONS FROM THE INSPECTION OF URINE.[1]

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In the ordinary routine examination of the urine there are several preliminary factors meriting consideration. First the sample to be examined should be liberal and not a scant dram or so. Then it is essential that the specimen inspected should not represent any particular renal effort; nor should it serve as an index of vesical health for any definite period of the day. The sample studied should come from the mixed total urine for twenty-four hours. This is most important in order to draw accurate conclusions from chemical analyses, for twenty-four hour quantities serve as bases of urinary calculations. The specimens should be examined as soon as possible. To avoid change from fermentation or bacterial activity, it is advisable to place about one dram of chloroform or toluol in the container.

To regard a sample of urine wholly isolated from the individual voiding it is an error. The quantity for a child ten years old is not equal to that passed by a man of thirty years. The reddish albuminous urine of a menstruating woman gives no cause for alarm. The profuse watery urine of low specific gravity, passed by a festive alcoholic might agitate one to the extent of thinking of diabetes insipidus.

It is well to have in mind the approximate nature and amount of solid and fluid ingesta, medicines; likewise the age, sex and degree of bodily activity. The general condition of skin and lungs is often very suggestive in consideration of the amount of urine excreted, particularly during extremes of seasons. Climatic influences are manifest in inverse ratio between the excretory action of the kidneys and the lungs and skin.

What can be learned from mere inspection of urine? The eye can grasp in a moment such

1 Received for publication May 25, 1904.

details as quantity, clearness, color, foam, sediment. Odor is frequently very suggestive. Reaction is often indicative. Considering these factors as individual premises, it is our desire to revert to the conclusions they suggest. Here it should be stated that *mere inspection does not obviate the necessity of careful chemical and microscopical examination.* Inspection does, however, suggest to the busy practitioner features calling for verification: and frequently saves a valuable minute or so for other work.

Normal amounts of urine, 900 c.c. to 1,200 c.c. (females), 1,200 c.c. to 1,500 c.c. (males) offer nothing definite to the mind, though rather giving presumption of renal sufficiency and of disease, if any, being cystic. Increased quantity immediately places in the foreground two conditions with three others in the background. Very large amounts, 7,500 c.c. to 10,000 c.c., almost invariably are due to diabetes insipidus, while 2,500 c.c. to 5,000 c.c. point more toward diabetes mellitus. The rare condition of amyloid kidneys is suggested, although it seldom yields more than 3,500 c.c. Contracted kidney usually offers 2,000 c.c. to 3,000 c.c. Frequently a slight increase, as 1,500 c.c. to 2,000 c.c., is the mark of a worried chlorotic woman or a student around the nerve-racking examination time. Decrease in excretion is the general rule of all fevers, with the most marked example in tuberculosis meningitis. Ascitic conditions, particularly cirrhosis of the liver, as would be expected, yield scanty urine. The condition, par excellence, pictured by diminished renal excretion to the point of anuria is acute nephritis. Marked decrease in quantity always demands most careful investigation. Congested kidney seldom offers less than 500 c.c. to 800 c.c.

A study of the color of urine *requires* the total excretion for twenty-four hours. Color varies largely with the amount of water excreted, and this has its diurnal variations. The contrast between the clear, sparkling, colorless urine of diabetes insipidus and the dark-hued, scanty urine of acute nephritis emphasizes this relation. Tea, coffee, hard work, mental fatigue, serve to vary the amount of fluid excreted and influence the color, as does, indeed, digestion itself, or potation. Variations in yellow color depend in part on urobilin. Brownish hues suggest increase of urea urates, uro-erythrin, as marked in the urines of fevers and puerperium. It must be remembered that urines darken on standing—this being especially noticeable in phthisis. The average, normal color is bright yellow or pale lemon.

Halliburton, by a table of doubtful general value, sought to classify urines by color with relation to cause. Medicaments and foods may yield characteristic alterations, as the deep yellow of rhubarb, golden yellow of santonin, orange of chrysophanic acid, blue of methylene blue, brownish black of tar, carbolic acid, etc.

The principal changes of yellow from saffron to dark olive green or mahogany brown are due to bile. Occasionally after standing for a short time exposed to the air a grass green color may appear, owing to oxidation and formation of biliverdin.

Bluish cast or dirty greenish color may be due to indican. Rarely a specimen may not show this color until oxidation has been aided by exposure to the air. Variations from a smoky hue in acid urines to deep red in alkaline suggest hematuria or hemoglobinuria, which should be investigated chemically and microscopically. A slight pinkish color points frequently to nephritis, especially if noted during the course of an infectious disease. Intermittent occurrence of reddish colors may result from malarial hematuria or rupture of varicose veins at the neck of the bladder. Inspection of hemorrhagic urine gives valuable information as to the probable source of the blood—as will be considered below.

Very rarely is the dark brown of melanemia encountered. Lipuria and chyluria present a creamy urine. Diabetes mellitus exhibits in most instances a pale greenish or light yellowish green.

Foam ordinarily forms and disappears rapidly. If it remains for some time it suggests albumin or sugar. If the foam is colored yellow bile is present, though rarely a strong urobilinuria may cause a similar appearance. If the foam is blue methylene blue or very strong indicanuria is the likely cause.

The common odor of urine, described as "not disagreeable" and aromatic, may be changed to the ammoniacal odor of decomposition, as in cystitis, with retention. Fecal odor may lead to the suspicion of a fistula high up along the genito-urinary tract. The sweetish odor of diabetic urine at times gives way to the danger-signal—sweet apple smell of acetone. Some foods give a characteristic odor, as asparagus. Medicines likewise leave olfactory traces, and all are not as pleasant or aromatic as the balsams or the violet scent of turpentine.

Clearness of urine, as a rule, exists for a very brief period after voiding. The nubecula of mucus, phosphates, urethral and vesical epithelia soon forms. This little cloud is said to be more marked in the urines of females because of the vaginal epithelium.

The sparkling clearness of diabetic urine is no less important than the slimy turbidity of cystitis. Turbidity may be due to urates or flocculent phosphates, in which case a simple chemical test of heat and nitric acid will clarify the urine. Pyuria gives a variable degree of turbidity. In mild cases pus appears more as a general opacity of the urine. The pus settles in inverse proportion to the amount of mucus contained in the specimen. Opacity in red and brownish urines suggests blood. If the blood is well mixed, the kidneys are the probable source. If large clots are present, the bladder is the most likely seat of trouble. If small wormlike blood casts are present the probable origin of the hemorrhage lies in the uretus or pelvis of kidneys.

Mucus present in unusual amounts causes a viscidity, especially noticeable on attempting to pour the urine. If mucous shreds, commas, etc.,

are present, the diagnosis of gonorrhea is all but made. The microscope readily determines with exactness the nature of the disease. The large, irregular, fibrinous shreds suggest superficial vesical erosions.

Portions of tumors may be present, but whether papilloma, myxoma, or more malignant growth can be told only by the microscope. Seminal fluid frequently appears as the source of turbidity and is taken for phosphates until a drop of acid fails to dissipate it and the lens tells the tale. Chyluria and lipuria give a creamy appearance and on standing the fatty molecules rise to the surface, forming a pellicle.

The red, sandy, gritty crystals of uric acid are commonly present in uricacidemia and are readily told at a glance. Oxaluria may be confusing until the lens reveals the highly refractile "letter envelope" crystals of calcium oxalate. Tomatoes, rhubarb, apples, oranges and many other fruits and vegetables may be the cause of needless alarm. Bacterial turbidity is diffuse, not very intense, of finely granular appearance. The microscope alone can determine it.

The general appearance of the urine often tells an approximate specific gravity. As a general rule, the darker the color, the higher the specific gravity, for amounts of urine under 1,500 c.c. In larger quantities of pale urines, if the foam disappear readily, the specific gravity is probably low; if the foam persist, specific gravity is very likely to be high.

The reaction may be judged to a degree from the color, clearness and odor. "Smoky" urine is acid. Bloody urine of a pinkish hue is alkaline. Marked turbidity with viscidity is indicative of alkaline, as is the ammoniacal odor of decomposition. Precipitation of phosphates with turbidity also bespeaks alkalinity. The presence of uric acid crystals in fresh urine makes acidity a certainty.

Thus without the use of heat, chemical, or instrument, the urine aids in determining its own pathology. The inspection is in no way determinative, but merely suggestive. Mere inspection does not do away with the necessity of careful chemical and microscopical analysis. It simply serves to direct the attention of the busy practitioner to prominent features which require further investigation. If inspection can save time without sacrificing carefulness, if it can suggest without confusing, it deserves some slight consideration from those who speak with scorn of the "sunlight test."

140 West One Hundred and Fourth Street.

Site for Orange Hospital.—A deal has just been closed by which the Rev. F. Victor Romanelli, rector of the Church of Our Lady of Mount Carmel, of Orange, N. J., has secured the handsome house and estate of the late Samuel F. Jayne for the site of the new Catholic Hospital at Orange. Father Romanelli bought property containing three large dwellings adjoining the Jayne estate last spring. Both will be utilized as the site for the hospital. The main entrance will be through Centre street.

QUANTITATIVE ALBUMIN DETERMINATIONS.[1]

BY KARL M. VOGEL, M.D.,
OF NEW YORK.

In spite of the fact that the importance of the subject has stimulated the investigators of several generations to endeavor to produce some easily applicable, rapid method for the quantitative determination of the albumin in the urine, their efforts have thus far been fruitless. The number of reliable qualitative tests, which can be quickly carried out, is quite large, but the only quantitative procedure, which is entitled to consideration where accuracy is required, is the tedious and complicated method of drying and weighing the precipitate obtained on coagulating the albumin by heat.

Of the methods applicable to routine clinical work, those of Esbach and Purdy have perhaps the greatest claim to convenience and ease of execution. The errors attending the use of the Esbach tube are too well known to require comment, and in addition a delay of twenty-four hours is necessitated before the result can be obtained. The centrifugalization method of Purdy is also open to criticism on the score of variations in the density of the deposit due to differences in the specific gravities of the urines tested, and owing to the technical difficulties of ensuring an absolutely uniform speed of the centrifuge at exactly the prescribed rate of 1,500 revolutions per minute during the required length of time.

The convenience of volumetric methods has naturally led to efforts to introduce them into this field also. Tanret,[1] Boedecker[2] and Venturoli[3] years ago devised analytical schemes of this sort, but they have been discarded as untrustworthy. Sahli[4] has lately proposed a volumetric method in which the albumin is precipitated by heat, filtered off, and redissolved in a known amount of alkali and its amount determined by titrating with an acid, using Congo red as indicator, but he himself expresses doubts as to the reliability of the figures obtained in all cases.

The simplest and most promising of the volumetric procedures is that published by Wassiliew in the *St. Petersburg med. Wochenschrift*, No. 37, 1896. The author's description of the method has been reproduced, but without comments as to its reliability, in various publications, and Ditman, about a year ago, called attention to the possible availability of the method. The present study was undertaken as a continuation of his determinations, in order to establish the accuracy of the results to be obtained by this plan.

The method consists in the precipitation of the albumin by a 25 per cent. solution of sulphosalicylic acid, using an aniline dye known as echtgelb as an indicator, and then multiplying by an empirical factor to obtain the amount of albumin. It was found possible to simplify somewhat the technic of the process without in any way in-

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validating its principles. The sulphosalicylic acid solution, which, of course, should be as accurately standardized as possible, can quickly be prepared by making it of such a strength that it exactly neutralizes two c.c. of a $\frac{N}{1}$ KOH solution, using phenolphthalein as an indicator. When made in this way, Wassiliew's factor, which consists of five decimals, may be reduced to the fraction .01, and if ten c.c. of urine be taken for the test, the percentage of albumin is obtained directly by noting the number of c.c. of sulphosalicylic acid required to produce the end reaction, and then moving the decimal point one place to the left.

The end reaction is by no means an easy one to determine, especially if the quantity of the indicator, two gtts., recommended by Wassiliew, is employed. It was found that the use of ten to twelve drops produced a much sharper end reaction without any apparent decrease of sensitiveness, the reaction being, if anything, more delicate with the larger amount.

The most advantageous technic was found to be as follows: Several portions of ten c.c. each of the urine measured with a pipette were placed in flat evaporating dishes of about seven cm. diameter. If necessary the urine was acidified with acetic acid, a frankly acid fluid appearing to give the sharpest end reaction. The same number of drops of indicator was added to each portion and the reagent then very slowly run in from a burette with constant stirring, as the union of the acid and albumin appears to take place somewhat slowly. The first portion tested was taken as a control, and after the end reaction had been reached, as denoted by the production of a red color, which did not appear to be deepened by the addition of a further drop of the reagent, a slight excess was run in. The titration was then carried out on the other portions in dishes of the same nature and under the same conditions of acidity and quantity of indicator as the first, the end reaction being reached as soon as the same shade of color as the control was obtained. Carried out under these precautions titrations on several portions correspond very closely.

In order to control the results obtained a number of gravimetric determinations of each urine were made and accurate averages thus secured. Six specimens of urine were used and each was also tested volumetrically, after dilution to one-half and to one-quarter with normal urine, thus making eighteen different albumin contents. It was found that the volumetric method gave fairly accurate results for urines containing more than .15 to .2 per cent. of albumin (the highest strength of urines tested was .27 per cent.), but that below this limit the percentage of error was so inconstant and high as to deprive the method of all claims to accuracy.

An important source of error appears to be the fact that even in normal urines a certain amount of sulphosalicylic acid must be added before the end reaction is obtained and as this is not a constant quality it would seem to be an irremediable defect of the method. It may be remarked in passing that the control determinations on which Wassiliew based the procedure were made by precipitating the albumin of the urine with alcohol, a method that has been found very unreliable.

The following table showing some of the averages obtained will serve to indicate the general character of the results yielded by the method:

No. of Specimen.	Amt. of Albumin in 100 c.c. Gravimetric Method.	Concentration of Urine.	Amt. of Albumin in 100 c.c. Titration Method.
I.	.245	Undiluted	.245
		Dil. to ½	.164
		Dil. to ¼	.140
II.	.137	Undiluted	.133
		Dil. to ½	.121
		Dil. to ¼	.120
III.	.222	Undiluted	.224
		Dil. to ½	.130
		Dil. to ¼	.122

Since the above study was begun, two authors, Spaeth[5] and Gerard,[6] have mentioned the method in their volumes on urinalysis just published. Spaeth condemns it utterly, and Gerard ranks it with the roughly approximate methods.

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MEDICAL PROGRESS.

MEDICINE.

Optic Neuritis in Paratyphoid.—Ever since the paratyphoid bacillus has been discovered, attempts have been made to distinguish clinically between paratyphoid and typhoid. The symptoms are, however, so much alike, that the differentiation has more scientific than practical importance, except that a more favorable prognosis can be given in paratyphoid. The development of an optic neuritis in a case of the latter disease in the practice of G. FLATAU (*Münch. med. Woch.*, July 12, 1904), prove that even the rarer symptoms of typhoid may occur here.

Vincent's Angina.—Two varieties of bacteria have been found by A. UFFENHEIMER (*Münch. med. Woch.*, July 5, 1904) in the secretion of Vincent's angina, fusiform bacilli and spirilla. The former are not motile and are decolorized by Gram if abundant alcohol is used, while the latter are very motile and absolutely Gram negative. Both are occasionally found in cases suffering from other affections. The disagreeable fetor characteristic of Vincent's angina is probably caused by the spirillum. All attempts to grow the latter on artificial media have failed, but the *Bacillus fusiformis* could be cultivated for four or five generations on sterilized saliva, though it was impossible to obtain a pure culture, owing to the fact that all solid media were unsuited. Attempts at inoculating animals were all negative and when a small amount of the secretion was rubbed into the tonsil of a normal individual, no inflammation occurred.

Congenital Hypertrophy and Dilatation of the Colon.—Hypertrophy and dilatation of the large intes-

tine (Hirschsprung's disease) in the majority of cases is a congenital disease and the patients rarely reach an advanced age, since gastro-intestinal disturbances develop only too readily during the first year of life, owing to excessive putrefaction in the stagnant feces. If the patients survive the first years, the intestinal musculature may accommodate itself to the wide lumen and there may be no further trouble except that intercurrent attacks may endanger life. The majority of patients are males who suffer from a most obstinate constipation and perhaps never have a movement without the use of an enema. Inflammatory processes in the intestines are common owing to the irritation of impacted feces and much blood and mucus may be voided. At the same time the tympanites may reach marked degrees and the patients may be a menace to themselves and their surroundings by the frequent discharge of extremely fetid gas. From time to time there may be attacks of obstruction with complete cessation of peristalsis. Objectively the enormously distended loops are clearly visible through the emaciated parietes and gurgling may be very audible. In children the growth of the rest of the body is retarded, and the thorax eventually becomes deformed. L. Kredel (*Zeitsch. f. klin. Med.*, Vol. 53) reports a few cases of his own, and dwells at length on one where laparotomy was performed for supposed obstruction., There was no impediment to the passage of feces but a loop of colon was firmly caught in the pelvis. The only interference consisted in freeing this loop, but the patient improved wonderfully and no longer suffered from attacks of obstruction. In most cases, however, an operation is not indicated, except to clear the diagnosis or to correct a kink, etc., which may be the cause of an obstruction. The daily use of very large enemas of water or oil is indicated in most instances. A colostomy may be in place when the attacks of obstruction frequently repeat themselves or where an ulcerative colitis has developed, but great care should be exercised, since there is a tendency for the sutures to tear out owing to the great weight of the colon.

Embolic Gangrene After Pneumonia.—One of the least common complications of pneumonia is embolism of the systemic vessels. The patient of L. Kredel (*Zeitsch. f. klin. Med.*, Vol. 53) suffered from a typically severe lobar pneumonia and was convalescing when two days after the crisis a sudden intense pain was felt in the leg and the limb soon became blue and cold. Two weeks later an amputation became necessary in the lower third of the thigh. Probably the embolus came from a thrombus which had formed in the left ventricle, since the patient had presented irregular heart action and a systolic murmur during the course of his pneumonia.

Essential Albuminuria.—C. Posner (*Zeitsch. f. klin. Med.*, Vol. 53) thinks it is a mistake to diagnose a nephritis in every case where traces of albumin are excreted. With delicate tests albumin may be detected in almost every urine, but larger quantities often occur in the so-called essential albuminuria and merely signify that the renal filter has become less dense without, however, altering the appearance or function to such an extent that a nephritis may be assumed. If the histories of such cases be studied in detail, an infectious disease will often be discovered as cause, but even after years the amount, appearance and specific gravity of the urine will remain normal and casts are uncommon or absent altogether. The treatment consists in proper diet and mode of living, since the kidneys undoubtedly form a *locus minoris resistentiæ*, and a nephritis may follow after the use of much alcohol, etc.

Changes in Corpuscles of the Blood in Puerperal Fever.—Examination of the blood in cases of puerperal sepsis has led Profs. Potocki and Lacasse (*Ann. de Gyn. et d'Obst.*, June, 1904) to the following conclusions as to its value for diagnosis and treatment; a certain amount of information can be elicited which will aid in the prognosis of a case; at least we can distinguish certain grave forms. Even if there be a high leucocyte count with a marked increase of the polynuclear forms, the prognosis remains favorable if the eosinophiles do not disappear. Where there is present a phlegmasia alba dolens, even in spite of the leucocytosis (30,000) or the polynuclear increase (90 to 95 per cent.) there may be a diminution of the eosinophiles. In the severe cases which recover, the eosinophiles increase as the polynuclears decrease in percentage. If the leucocytes go above 25,000 to 30,000 and the polynuclears are between 80 and 90 per cent. the prognosis should be guarded, especially if the increase is accompanied by the diminution in the eosinophiles.

Relation of Appendix to Pelvic Disease.—All operators are agreed that whenever the abdomen is opened for other abdominal or pelvic disease, the appendix should be examined and removed if diseased. The fact that a number of appendices thought to be normal at the time of operation proved subsequently to necessitate a second operation, led R. Peterson (*Am. Jour. Obstet.*, July, 1904) to study two hundred appendices, grossly and microscopically, removed in cases operated upon for distinct gynecological lesions. These were classified in six groups, as follows: Negative, 32.5 per cent.; chronic inflammation, 28.5 per cent.; doubtful significance, 20.5 per cent.; former inflammation, 14 per cent.; acute inflammation, 3 per cent.; peri-appendical inflammation, 1.5 per cent., this last class including two cases of tuberculosis and one of primary carcinoma of the appendix. The social condition of the patient had practically no bearing on the relation of the appendix to pelvic disease. In 8 per cent. of the cases fecal concretions were found macroscopically, their presence did not necessarily indicate that the appendix was diseased. In cases with chronic disease of the appendages 41.5 per cent. showed diseased appendices. Uterine fibromata were present in 26 of the 200 cases, in 50 per cent. the appendices were normal. In 24 cases of ovarian cystomata 70.9 per cent. of the accompanying appendices were diseased, a proportion larger than with fibroids. It was further concluded from the study of these cases that only about 50 per cent. of appendices removed during operations for pelvic lesions are normal; that the average length of the appendix is between 8 to 9 cm., the maximum length being found between the ages of twenty and thirty years; that menstrual pain may be due or enhanced by an inflamed appendix; that the shape of the appendix, the presence of adhesions, acute or chronic disease of the appendages cannot serve as indices of normality or disease of the appendix. Since it is impossible by gross appearance alone to determine which appendix may be diseased and since 50 per cent. of appendices removed in cases where the abdomen was opened for other purposes are diseased, the surgeon should, in the absence of contra-indications, remove the appendix in every such case.

Anchylostomiasis.—Baroni (*Gazz. degli osped.*, June 12, 1904) concludes that anchylostomiasis is a disease which if diagnosed early is neither dangerous nor hard to cure. If not recognized or properly treated it can be fatal to the patient and expose others to the infection. An enormous quantity of ova are passed by each patient, which rapidly develop into larvæ, which can penetrate into other human beings. This may take place by feces being passed into water, or earth that is being cultivated, and the hands of laborers become contaminated. Epidemics of anchylostomiasis are not unknown. When a man shows the typical anemia with other symptoms he

should be separated from other workmen and his feces burned. The chief symptom is a grave anemia, which does not readily yield to iron, suggesting pernicious anemia, latent malignant tumor, gastric atrophy or malarial cachexia. Microscopical examination of the feces will show the eggs, though this may have to be repeated several times. The intoxication of the organism is the cause of the various symptoms, shown especially by the toxicity of the urine; treatment consists in emptying the intestine, and preventing a rigorous diet. Thymol and castor oil are the best drugs. The patient should remain in bed.

Disinfection of the Biliary Passages.—Of the various disinfectants which pass over into the bile, F. KUHN (*Zeitsch. f. klin. Med.*, Vol. 53) found that thymol and menthol possesses the strongest antiseptic properties. With ordinary medicinal doses the amount secreted would not, however, be sufficient, so that the next drug on the list, sodium salicylate, is recommended. In a strength of 0.1 per cent., the growth of germs is retarded, while 0.6 per cent. will completely sterilize the bile. Drugs which act in higher concentration are naphthol, aspirin and citarin, but ichthyol and saccharin are almost valueless.

Hyperacidity in Gastric Cancer.—It is well known that anacidity is the rule in cancer of the stomach, except where the tumor has developed from an ulcer, or marked nervous symptoms are present. V. ZIEGLER (*Zeitsch. f. klin. Med.*, Vol. 53) has, however, seen several cases where the previous history did not point to ulcer or nervousness and where distinct symptoms of hyperacidity were present. He divides the disease into three stages: (1) Stage of uncomplicated hyperchlorhydria in patients of advanced age, formerly well. Half to two hours after meals these patients complain of pressure in the epigastrium and heart-burn. Though the appetite is good, coffee, wine and tobacco no longer agree and constipation is obstinate. The test meal will show a total acidity of 90 to 120, with 58 to 80 free hydrochloric acid, but without lactic acid or characteristic bacilli. The physician believes he is dealing with a case of ulcer or simple hyperchlorhydria, but the usual treatment causes no improvement. (2) The amount of acid may be normal, increased or diminished. Mucus is increased and motility impaired. The general condition is no longer good and the patients complain of anorexia, loss of weight and pain, no matter what is ingested. The tongue is coated and traces of lactic acid with Boas-Oppler bacilli may be found in the stomach. In the third stage finally the patients present the usual picture of cancer. It is clear that a diagnosis may be impossible during the first and second stages, but attention should be directed to the following facts: (1) Silver nitrate, bismuth, alkalies and atropine only cause temporary improvement. (2) A remarkable dislike toward meat is often present. (3) The advanced age will speak against uncomplicated hyperchlorhydria, and there may be some anemia. (4) The development of a gastritis with impaired motility is very suspicious.

Diagnosis of Anemia.—E. BIENACK (*Zeitsch. f. klin. Med.*, Vol. 53) is strongly opposed to the common practice of calling every patient with pale mucous membranes anemic. Anemia is a dilution of the entire blood, and can only be diagnosed by an exact analysis of the amount of hemaglobin and the number of red cells present. If the blood of many pale patients be examined, normal figures will often be obtained for the dry residue, and iron, instead of improving, will make the condition worse. The patients really belong to the large class of functional neuroses and their pallor is due to spasmodic contraction or congenital stenosis of the peripheral vessels. The characteristic yellow color is not present and heart murmurs do not occur. The author believes that fully 60 to 65 per cent. of all so-called anemics belong to this class.

Systemic Infection with the Colon Bacillus.—In cases with typhoidal symptom-complex but no clear history of typhoid, it should not be forgotten that the colon bacillus may be the cause. The patient of W. BAUERMEISTER (*Zeitsch. f. klin. Med.*, Vol. 53) presented the following symptoms: Continuous fever, severe headache, chills, vomiting, pains in back and abdomen, slight bronchitis. Characteristic symptoms of typhoid, such as roseola, swelling of the spleen, diazo and hypoleucocytosis were not, however, present. The diagnosis was established beyond doubt when colon bacilli were grown from the blood and urine. The patient improved but amputation of the testicle became necessary later. From the testicular pus, a germ was isolated which resembled the typhoid in many respects, yet the author believes it was merely a colon bacillus with diminished virulence.

Cause of the Pulsus Paradoxus.—Pulsus paradoxus is a name applied by Kussmaul to a pulse which becomes smaller during inspiration and regains its normal volume with expiration. Since the symptom has been most frequently observed in chronic mediastinitis it has generally been assumed that adhesions connecting the aorta with the neighboring structures have been responsible. E. REICHMANN (*Zeitsch. f. klin. Med.*, Vol. 53), however, offers the following explanation: During normal respiration the difference between expiratory and inspiratory intrathoracic pressure is so slight as to be without influence upon the blood within the great vessels. If dyspnea, however, is present, the difference is much greater and more blood will be received into the aorta during the marked negative pressure incident to inspiration, so that the peripheral pressure falls considerably. This will naturally be more marked where heart-action is feeble or bands press on the vessels.

Early Diagnosis of Gastric Cancer.—Many bacteria have been found at various times in the stomach contents of patients suffering from gastric cancer, but only the long or Boas-Oppler bacillus seems to have diagnostic importance. In a case which had been examined repeatedly by S. HEICHELHEIM (*Zeitsch. f. klin. Med.*, Vol. 53), these bacilli were never found, until the expression contained a blood-clot which turned out to be almost a pure culture. A diagnosis of cancer was then made, and confirmed at operation. Other cases were then examined, and small, brown coagula with bacilli found in almost every instance, except where the tumor had not yet ulcerated. In simple gastritis with diminished or absent hydrochloric acid, the coagula are very rare, and if they do occur, will never contain such masses of bacteria. Indeed, their presence seems to be one of the earliest signs of cancer. Even in tumors secondary to ulcer, and with considerable free hydrochloric acid, such clots are frequently found.

Hyperacidity and Its Treatment.—If stomach analyses are made systematically in all disturbances of the digestive tract, even when the symptoms are not primarily gastric, one will be astonished to find how common hyperacidity is. In many cases the patients themselves are totally unaware of this condition and merely complain of symptoms referable to neurasthenia. In a second class, the main complaint is constipation, and drugs with change in diet, directed against this will often cure the stomach as well. The third type has distinct gastric disorders and the nutrition is often below par. In these cases C. v. NOORDEN (*Zeitsch. f. klin. Med.*, Vol. 53) has seen the best results from enforced feeding. Even where there is a distinct anatomical lesion, as in acid catarrh and gastric ulcer, it is desirable to give large amounts of food after the first eight or ten days of moderation.

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HEAT EXHAUSTION AND SUMMER DIARRHEA.

It is well known that summer diarrhea in children occurs much more frequently toward the end of the summer than during its earlier weeks. The reason for this is acknowledged to be that the hot weather reduces the resistive vitality of the child. At first the infant is able to stand a certain amount of irritation of the gastro-intestinal tract without severe reaction. After it has been weakened, however, by exposure to heat and milder attacks of digestive disturbance during the early part of the summer, severe and even fatal diarrhea may result after only slight irritation.

Notwithstanding the recognition of these facts, and the indications to which they so clearly point, they are not always heeded. The most important element in the care of a child during the hot weather must be to keep it cool. For this purpose it is necessary that it should be very lightly clad, should not be allowed to sleep on soft, yielding beds or pillows, and should be frequently bathed in cool water. We have come to realize now that thermic fever may exist in slight degree without necessarily going to the extent of actual unconsciousness or other severe forms of so-called sunstroke. We know, too, that if patients are kept cool the danger of such thermic fever becoming serious is very much lessened.

Dr. Illoway has recently insisted, in his little volume on the "Summer Diarrheas of Infants," that thermic fever is not infrequently the basis of the pathological condition on which severe summer diarrheas develop. If by various artificial means children can be kept cool there is much less likelihood of these dangerous complications. There is still a prejudice in the minds of most people with regard to the frequent use of cool water for children's baths, and the medical profession could confer no greater boon on the suffering little ones than to emphasize the necessity for frequent bathing, not only after the infant has begun to show signs of irritability from the severe hot weather, but as a prophylactic measure, while it is still in good health.

Besides this there is need for emphasizing that important element of baby's care, the significance of which is only just beginning to be generally realized, that for comfort's sake the infant must be handled just as little as possible.

As the summer advances and resistive vitality and irritability increases, handling is more and more objectionable. Adults find contact with one another during hot weather extremely disagreeable. Infants, unable to secure any change for themselves, are sure to suffer even more. The bacteria productive of gastro-intestinal disturbance are only one element in the production of disease, the other is the lack of individual resistance, and there are those who would insist that this latter is quite as important, and that, indeed, on it depends the virulence of the disease.

RECENT STUDIES ON RADIUM.

As might very well be anticipated from the exaggeration of the first accounts with regard to the employment of radium in medicine and surgery, there has been a decided reaction, and some assertions have found their way not only into newspapers, but even into the medical press, that radium can be of no possible service in therapeutics.

It will be of interest then for our readers to note that at a meeting of the New York Academy of Medicine, held May 19, an account of which will be found in the society proceedings of this week's Medical News, observers who have been faithfully working with the metal, but not announcing their results before they knew what their results really meant, have some encouraging

things to say with regard to the therapeutic possibilities of a new and marvelous substance of which so much was expected, and not without good reason.

At that meeting Dr. Piffard called attention to the fact that the radiations from radium occupy an intermediate position between those which are used for therapeutic purposes in the Finsen light and the X-rays. His expression that the radiations of radium are really a transcendentalized pocket edition of the X-rays expresses this thought very succinctly. The radium rays are not simple, but consist of alpha, beta and gamma rays, which have been observed from other sources as well as radium, but seldom in such readily available quantity as from this new element. The alpha rays are probably positive electrons, the beta rays are negative electrons. Both of these are corpuscular in character and have a definite size and weight. The so-called alpha rays are material particles, probably of about twice the size of an atom of hydrogen. The beta rays are probably of about one-thousandth the size of an atom of hydrogen. As the atom of hydrogen has been up to the present time considered so small as to be the standard of weight in atomic weights in chemistry, it can readily be understood how minute this new particle of matter is thought to be. The gamma rays from radium are true etheric waves, probably not corpuscular in character and possess great penetrative power. The alpha and beta rays are very much hindered in their action by the material in which the radium is kept. Glass, for instance, lessens their activity to a very great extent. Dr. Piffard has found that aluminum makes a much better substance as a retainer for radium than glass. In most cases the external pressure is produced by the emanations of radium, which are different from the radiations from radium, and which are found to be mainly composed of helium. These force their way through defects, air bubbles and the like that may exist in the glass phials in which radium is kept. Even when aluminum is used, Dr. Piffard has found that the emanations find their way apparently through the pores of this metal, and their disappearance always leads to a lessening of the radio-activity of the radium. As a consequence he has found it necessary to enclose the aluminum tubes in which radium is kept within tubes of some other metal, using silver for the purpose because of its density.

Dr. Abbe called attention to certain recent observations with regard to the biological effects of radium. If seeds are exposed to the action of the metal for several days they are very much retarded in their growth. Those seeds are most retarded which have been longest exposed. On the other hand, in insect life a very curious result has been noticed. If the larvæ of insects are exposed to radium, those that survive the exposure fail to go through the ordinary transformations and to exercise their reproductive capacity. Meal worms, for instance, exposed to radium do not become pupæ and then beetles which lay eggs, out of which further meal worms develop, but continue a prolonged existence as meal worms. These meal worms live on for several generations after their contemporaries metamorphosed, have given life to new generations which in turn have gone through their transformations in a natural way. The exposed meal worms may live the length of several generations in the worm stage without any tendency to be transformed.

The application of such an inhibitory property for the rapidly multiplying cells of cancer at once suggests itself. Where the radium can be so applied as to act directly upon the cells of malignant growths either sarcoma or carcinoma, it has the happy effect that might be anticipated. There is every reason to continue the experimental use of the metal in surgery, especially as lupus, warts and other benignant skin tumors are favorably affected by it.

A TEXAN WELLSPRING OF PLEASURE.

That certain people are possessed of a certain peculiar power, and are endowed by nature with some inherent ability to perform minor miracles, has long been a popular belief. Thus, as the law of compensation always enlarges the supply to meet the demand, we have become surrounded with an increasing class of astrologists who can read their victims better than they can the stars, and of fortune-tellers who will prognosticate anything for the moderate sum of one dollar.

These people all, however, belong to the genus "fake"; they live in cities and are surrounded by the paraphernalia of their trade, and if anyone is fool enough to part with his money to them it can generally be regarded as a divine interposition on the part of Providence to prevent it luring him into more serious trouble. As a class they all bear a striking resemblance to each other. The men are, as a rule, thin and hectic, a cross between the Edwin Booth Hamlet type and that of

the melancholy Jaques, while the women, on the contrary, are possessed of that exuberant glandular development which is characteristic of advanced maternity, with blondined hair, the roots of which seldom justify the ends.

Of the making of these imposters, like that of books, there is no end, but that, as Kipling says, is another story. But every now and then some apparently well-authenticated case comes up of the alleged power of some particular individual to do a peculiar thing that is "beyond the power and against the ken" of the ordinary mortal. These manifestations usually occur in what might be called the middle register, both in regard to the social position of the performers and their age. Another singular fact seems to be that these mediums have no previous knowledge of the power that lies in them until it suddenly breaks out in a volcano-like eruption, and that the evidence of it seldom becomes apparent until long after the consciousness of its possession would have been of the greatest financial advantage to them. This, however, in most cases, is soon remedied, and the nebulous current derived from God is speedily short-circuited to serve the practical purposes of Mammon.

Now, if "Mammon was the last ejected spirit that fell from Heaven," as we are taught, there is every reason to believe that she alighted with the dull thud of gold in Texas. It also seems that Henry Zachary, a plowboy of fifteen years, can be metaphorically cited as a corespondent in her fall, and that he was mashed by her. At all events, a few short weeks ago he was eating bread and cheese, when he could get it, with a strong and healthy appetite. He was also supporting himself and his blue jean overalls by the single suspender of a strict attention to drawing his furrow as straight as the Texan law allowed; while his financial standing in the community was synonymous with that of the church mouse.

Now it is all changed, for the wealth of Ormus and the Ind is his, and his plowshare has been rebeaten into the sword that has pried open the oyster of success. He has a two-bladed "Barlow knife" and gum galore to chew, while his dependent father loafs in a Tuxedo coat about the farm and smokes "seegars." All this is due, it seems, to a magic power that the boy's hands possess, by which, according to the published report, he can "locate minerals, water or oil at a great depth, with a certainty never before known." It appears that while he was holding the plow in one of his father's fields he was seized with a peculiar and well-defined tingling in his fingers whenever he passed over a certain part of the lot. This sensation returned, too, with accumulative effect, on every succeeding arrival at this particular spot, until he was forced to cry out for his father's help.

Now, Farmer Zachary is not a typical visionary man. Strong he is, and planted firmly on feet that can trudge uncomplainingly over more rough ground than two strong oxen can plow from morn 'til night. So he ridiculed the boy, and told him "not to take his hands from off the plow," and quoted Scripture to him. But all without avail. Finally, as the father was unable to do two things at once, he stopped plowing and began to think. Wearying with the unaccustomed task, he at length arrived at the conclusion, reached by the most acute of all French minds, that it takes longer to think about a thing than it does to do it, and he promptly acted.

Well diggers were set at once to work and found a goodly supply of excellent water, though at a considerable depth below the surface. This miracle was repeated on a neighboring farm, and then the lad's fame spread, like a wave of the incoming sea, completely over Caldwell County, submerging the local divinators and floating their forked twigs and rods out into the dim ocean of obscurity.

And now no man can dig a well without his aid, or sink a shaft until his tingling fingers have pointed out the spot; nor, if report be true, will these peculiar hands, that have become cramped around the handle of the plow, unbend into any practical usefulness until the itching in the open palm is soothed away with Mammon gold.

ECHOES AND NEWS.

NEW YORK.

Entertainment for German Scientists.—The "Union of Old German Students in America" will entertain the German Scientists who attend the St. Louis Congress of Art and Sciences at a "Commers" in Arion Hall, October 8. Most of the eminent guests are medical men.

Dr. Bellamy Injured.—Dr. J. R. Bellamy was injured in a polo game at Van Courtland Park August 17. It was feared that he had sustained a fracture of the skull, but it was said at the Fordham Hospital later that Dr. Bellamy was gradually regaining consciousness and that his chances of ultimate recovery had very much improved.

Gouverneur Physician Exonerated.—An examination into the death of Henry M. Miller, a Bellevue Hospital orderly, at the Madison street police station on Sunday morning, has resulted in the exoneration by the Bellevue Hospital authorities of Dr. A. W. Taves, of the Gouverneur Hospital staff, who was called to attend

Miller in Seward Park the previous evening. Dr. Taves offered to take him to the hospital, but he refused to go in the ambulance, and as he was not under arrest Dr. Taves could not forcibly take him. Later Miller was arrested and taken to the police station, where he died. The physician's action in the case has been approved by the hospital authorities, including the superintendent of Gouverneur Hospital.

St. Elizabeth's Hospital in Litigation.—The Supreme Court has been asked to direct the Windsor Trust Company to pay over $70,000 which the Pennsylvania and Long Island Railroad companies paid as the fixed value on St. Elizabeth's Hospital, at 223 and 225 West Thirty-first street, a part of the site of the new Pennsylvania terminal station. There is some discussion concerning the disposition of the funds arising from the fact that the old hospital was conducted by a lay order, while the new one is to be conducted by the church.

Health Department Examinations.—An examination of applicants for the position of assistant physician in the hospitals for contagious diseases connected with the Department of Health will be held at the Willard Parker Hospital, at the foot of East Sixteenth street, on September 1 and 2, 1904, at 2 P.M. Applicants should have had a general hospital training, or practical experience in the care of infectious diseases. The positions are salaried. Examinations will be both written and practical, and will include general medicine, surgery, pediatrics, bacteriology, pathology and infectious and contagious diseases.

An Effort to Decrease Infant Mortality.—The Department of Health has issued explicit directions for the care of infants during the summer. The damp weather of the last two months has caused an extraordinarily high infant mortality, the average since July 2 having been 377 a week, against an average last year of little more than 200. Much is done by charitable citizens and institutions by providing excursions to the country for the sick children. It is impossible to afford opportunity for more than a trifling part of the infants of the poor to get fresh air. It is practicable, however, to see that every family is properly instructed in the rudiments of nursery hygiene and sanitation, and organized effort in this direction has led the Health Department to formulate the following instructions: *First*—Nurse the baby, and nurse it regularly, about every three hours. If you cannot nurse the baby consult your own physician or send to the Department of Health for a physician. *Second*—Do not give the baby condensed milk. *Third*—Never use the loose milk sold in grocery stores as food for the baby. *Fourth*—Never give the baby raw milk in warm weather. *Fifth*—Use only bottled pure fresh milk, properly prepared and sterilized, and feed the baby at regular intervals, about every two and a half or three hours. *Sixth*—In the morning prepare and sterilize enough milk to last the baby during the day and until the next morning. Cover each bottle and place on ice after sterilization. *Seventh*—See that the nursing bottles and nipples and all dishes used to hold the milk are kept absolutely clean. Wash these utensils in hot soap suds and then rinse in scalding water each time before using. *Eighth*—The water that is used to dilute the milk must be boiled. *Ninth*—Send to the Department of Health for a circular telling just how the milk should be prepared and how the baby should be fed and cared for, or notify the Department of Health that you want a trained nurse to show you how to prepare the food. *Tenth*—Send at once to the Department of Health or for your own physician if the baby becomes ill. Stop giving milk during the illness of the child, and give the milk only when the physician directs it.

PHILADELPHIA.

Jefferson Hospital.—Work on the new building is progressing, most of the first set of posts of the superstructure being in place. A small portion of the east side of the old building has been taken down to allow building of a new chimney.

St. Luke's Hospital.—Contract has been let for alterations on the new building at Broad and Wingohocking streets. The work will be completed by the end of November, when the hospital will be moved from its present location. The new plot is 225 by 400 feet, which gives ample room for additional buildings.

Certificates for Pharmacists.—At the examination held by the State at Williamsport on July 19, 87 of the 155 applicants were successful in obtaining certificates. Among these were 56 of the 101 who took the examination for registered pharmacist and 31 of the 56 examined for qualified assistant's certificate.

Ask Power to Cancel Licenses.—The Pennsylvania State Board of Medical Examiners is to ask the legislature to grant the power of recalling and cancelling any license issued by them. This is for the purpose of dealing with any person who from lack of education other than medical, or because of his moral character being of such degree, is not qualified to act as a physician. Such men may now practise until caught at some criminal operation. Hereafter certificates are not to be given by the board to illiterate candidates, even though they possess the requisite technical knowledge. It is believed that the power to revoke licenses will prove the best method of dealing with malpractitioners.

Examination of Athletes at Pennsylvania.—Dr. R. T. McKenzie, the new physical director of the University of Pennsylvania, will allow no student to participate in any line of athletics unless examination shows the man to be fit to endure the strain. The evils which the medical profession point out in the overexertion and physical injuries of college sports are brought about by the lack of just such examinations as will, in the future, be compulsory at this college.

CHICAGO.

Lessened Mortality Among Young Children.—The City Health Department has the following to say regarding the low mortality among children this season: "One of the most remarkable features of the present season, as to the public health, is the unprecedentedly low mortality from contagious diseases of childhood, and as a consequence a very low general death rate for the city. Only one death each from diphtheria and measles, three from scarlet fever, and four from whooping-cough were reported during the week. Since the first of the year have been 21 deaths from diphtheria; during the corresponding period of 1903 there were 328 diphtheria deaths, a decrease this year of more than one-third. Deaths from scarlet fever show a decrease of 52.2 per cent.—241 last year, 115 this year. In the whooping-cough mortality the decrease is 80 per cent.—241 deaths in 1903, 48 in 1904. Against the 23 deaths from measles since January 1, 1904, there were 258 in the corresponding period of last year, a decrease of 91 per cent. The gross mortality of the four principal contagious diseases of childhood thus far in 1904 is not much more than one-third (37.3 per cent.) that of the corresponding period of 1903."

Prevalence of Smallpox in Zion City.—Sixteen cases of this disease are reported from Zion City, and the adjoining towns are taking precautions to prevent its spread.

Mortality for Week.—Acute intestinal diseases head the list of deaths with 111; violence caused 62 deaths;

consumption, 56; heart disease, 41; Bright's disease, 29; cancer, 22; and pneumonia, 20. The total deaths were 496, equivalent to an annual death rate of 13.41 per one thousand.

GENERAL

Gift to St. John's Hospital at Yonkers.—The late Cornelia A. De Wint has bequeathed to St. John's Riverside Hospital at Yonkers, $10,000.

Tuberculosis Congress.—The American International Congress on Tuberculosis will be held October 3, 4 and 5, 1904, under the auspices of the Universal Exposition, St. Louis, 1904, the American Congress on Tuberculosis and the Medicolegal Society of New York.

Supposed Dead Doctor Returns.—Dr. R. G. Lightle, who was supposed to have been burned in his barn at Searcy, Ark., May 22, and on whose death insurance companies paid $19,000 on policies, has returned. He says he went away suddenly because he had a corpse in his barn for dissection, and when the building burned he feared he might be arrested for grave robbery.

Vaccination in Hydrophobia.—Consul General Guenther, at Frankfort, Germany, has supplied to the State Department official statistics concerning the efficacy of vaccination as a preventive of hydrophobia. The substance of these is that only 1½ per cent. of persons bitten by mad animals and vaccinated have died. The figures also show that Russia is the breeding place of hydrophobia.

Snake Venom and Cold-blooded Animals.—The action of snake venom on cold-blooded animals has been tested by Dr. Noguchi in a long series of experiments (Carnegie Institute of Washington, Publication No. 12). Three venoms were employed, viz., those of the cobra, water moccasin and rattlesnake. Snakes and frogs succumb easily to cobra venom, but are relatively insusceptible to the other venoms; turtles are more susceptible to all venoms than the foregoing, and fish are still more so. The grasshopper and some crabs are almost insusceptible, while the lobster is only moderately resistant. Excepting the earthworm, all the worms showed a low degree of susceptibility. The venoms have little effect on the *Echinodermata;* sea urchins succumbed, however, but starfish and sea cucumbers were not perceptibly affected.

Nerve Energy and Electricity.—Recent investigations by Dr. Jacques Loeb and others, according to the *Sat. Evening Post*, seem to point to the conclusion that the nerve centers of the human body are in a true sense storage batteries charged with electrical energy. It is not unreasonable to imagine that what we call fatigue may be due to the temporary exhaustion of the battery-power. The batteries contained in the "wings" of the fish known as the "torpedo ray," which is able to inflict a shock that will stun a man or a horse, are regarded by anatomists as modified muscles. They are composed of an arrangement of cells, corresponding to small Leyden jars, in which electricity is stored through the medium of the nervous system—a fact proved by the circumstance that, when the connecting nerves are severed, the organs lose their power to give a shock. It is much the same way with the so-called "electric eel," and with a species of catfish which is likewise a dealer in small thunderbolts. Observation of the phenomena described makes obvious the close relation between electricity and nerve energy. When the human body is at rest the storage batteries, which are called the nerve centers, are slowly charged. During the day the supply of energy is gradually dissipated, and nature demands another period of repose in order to refill the battery cells. Such, though the theory is as yet more or less speculative, is the belief toward which science at present is leaning.

Asepsis and Antisepsis.—It has been known for some time that a reaction was in progress from the extremes to which the German school has carried asepsis in surgery, says the New York *Times*. The movement started by Lister was in itself a reaction from the slovenly practices which obtained before his time and had something of the character of a reform. Professor Dr. O. Rosenbach, of Berlin, in his "Arzt contra Bakteriologie," finds the courage to enter the lists with the following challenge: "The time is not far off when antiseptics will, in most cases, be used only for disinfecting the external skin and the instruments. Water and soap will be reinstated in their place of honor as cleansing materials. The quintessence of antisepsis, as explained long since by many successful operators whose work is done without the aid of bactericides, which, in truth, had better be called tissue destroyers, or protoplasm poisons, will be reduced to an endeavor to avoid the introduction of additional virulent agents into the human organism by our operative measures which must in part destroy the protective barrier of the organism owing to the necessity of entering the interior of the body; therefore, to operate with clean hands, clean skin, and clean instruments, as well as, above all, to handle or squeeze tissues as little as possible in order not to reduce their defensive apparatus by local necrosis, and thus to assist in facilitating the process of regeneration. That all this may be accomplished by the simplest means of relief, provided practice and dexterity are in evidence, reducing the insults to a minimum, is illustrated by the history of ovariotomy. An operator who works gently and deftly, and does not imagine that under cover of strict antisepsis any and every abuse of tissue is licensed, will always command brilliant results. The dogma of the efficacy of purely external disinfection being such absolute protection as to render superfluous any regard for the patient or the healing powers of nature, has been provocative of more mischief than the adherents of absolute protection by means of toxic antiseptics will ever care to acknowledge." In commentary the *Times* says that perhaps the pendulum-swing in his case only illustrates the law that action and reaction are equal, and it may very well be that the truth lies somewhere midway between the views he combats and those he announces.

Control of Opium in Formosa.—In the report of Mr. Consul Playfair on the trade of North Formosa particulars are given of the manner in which the opium trade is regulated. The authorities are doing their best to put down the opium habit; no one but the government is allowed to deal with opium in any way, save those who are licensed. Only those proved to be addicted to opium are given permission to buy and smoke it. Exceptionally heavy penalties are inflicted on those detected in importing, selling or smoking the drug without permission. The revised regulations for the application of the opium law show that the government makes three qualities. Agents and dealers in opium have to be non-smokers and persons of good character. They are licensed, as are the smokers, and the latter must always produce their licenses when purchasing opium, of which only a certain quantity can be bought. The price is fixed by the government, and the selling agent who supplies the retailer is only allowed a profit of 1½ per cent. He pays three yen a year for his license, and has to report monthly the quantity and value of the opium he has sold since the last report. The retailer also has to pay three yen per annum for his license, and has to keep a careful account of his transactions and report to the police. The attempt to control the opium habit caused at the outset many disturbances, and the authorities found great difficulty in ascertaining the number of smokers, as people refused to give information; it was not until late in 1900

that it was believed that all the opium smokers in Formosa were registered. Since that date it is reckoned that the number of smokers has decreased by about 1,000 a month. There are three grades of opium made at the government factory, all of which those who can afford to buy a first class ticket (red) at 3 yen per month may purchase and use. The second class smoker pays 1 yen 50 sen per month for a green ticket, entitling him to buy the second and third grades of opium, while the third class smoker pays 20 sen monthly for a yellow ticket, conferring the right to indulge in the commonest quality only. The use of opium in Formosa is steadily declining, the result not only of law but also of public opinion.

Japanese Field Surgery.—Dr. Louis L. Seaman, of New York, writes that the Japanese are giving proof of the benefits to be derived from the non-interference with wounds on the field, where they content themselves with the application of first-aid bandages and antiseptics, leaving the more serious work to be done in the hospitals at home. This course is followed except where there is danger of the wounded man bleeding to death or where his condition is very precarious. The result of this practice has been that many men suffering from bullet wounds at the front are nearly well when they reach Japan. In one hospital ship returning to Japan from the front there were 2,200 wounded men, and there was not a single death on board during the trip. There have not been more than three deaths among the wounded who have been returned to Japan after having received first-aid treatment only. If the Japanese soldier is not killed outright, Major Seaman says, the chances are that he will recover. His temperate habits and his plain and healthful diet of fish and rice, varied occasionally with meat, contribute much to his recovery. Russian wounded captured by the Japanese have been treated in a similar manner, and the recoveries among these men are scarcely less in proportion than among the Japanese. A new complication has been discovered in the wounds sustained in this war due to the extraordinary high speed of small-calibre bullets, which produce aneurisms by their speed. Dr. Seaman saw twenty-seven operations performed for the relief of this condition.

OBITUARY.

DR. D. M. BARNETT died August 21, at his home, in Claremont, Texas, aged ninety-five years.

DR. GEORGE T. HESTON, a descendant of Llewellyn, King of Wales, died at his home at Newtown on August 19, aged seventy-eight years. He studied at Haverford College and the University of Pennsylvania, and later made a trip around the world as surgeon on the bark Adelaide.

DR. J. FREDERICK NOTT, of New York City, died in the Maine General Hospital, at Portland, Me., August 19. Dr. Nott, who had boarded an express at Kennebunk, bound for Bar Harbor, was taken ill a short while before the train was due in Portland, and when that city was reached his condition was so serious that it was decided to remove him to a hospital.

Physical Deterioration Among the English.—The English Inter-Departmental Committee on Physical Deterioration has issued its report in London. It deals at length with conditions of employment, urbanization of people, depletion of rural districts, question of food, etc. It may be necessary, the committee says, in order to complete the work of clearing overcrowded slums, for the State, acting in conjunction with the local authority, to take charge of the lives of those who, from whatever cause, are incapable of independent existence up to the standard of decency which it imposes.

SPECIAL ARTICLES.

BYWAYS OF MEDICAL LITERATURE.—XXII.

CHEMISTRY AND MEDICINE.

A VERY interesting article on the relation of modern chemistry to modern medicine, an address delivered before the Sigma Xi Society of the University of Kansas, by Professor J. H. Long, furnishes an excellent idea of how far chemistry can be helpful in practising theory in modern medicine. Especially with regard to the much-disputed question in recent years of the action of ferments, Professor Long's opinion should be known by all those whose duties as teachers lead them often to talk of ferments and fermentations. Very seldom has a difficult question been put so clearly, so simply, and at the same time so thoroughly up to date.

"It was certainly an auspicious day for chemistry, and medicine also, when Pasteur developed his biological theory of alcoholic fermentation. Not long after came the work of Kühne, Brücke and others on the enzymes, already referred to, and finally Buchner, to clearly demonstrate the long-suspected enzymic character of the yeast ferment. Practically all recent work in this direction has gone to show that so-called organized fermentations are all dependent in turn on enzymic ferments contained within the cells. This distinction may probably be made: In the yeast fermentations, for example, the sugar to be converted is drawn into the cell, and the products, alcohol and carbon dioxide, formed by the zymase, are in turn excreted. In diastasic and similar fermentations, on the other hand, certain cells produce an active ferment which is discharged to do its work outside the generating cell. The difference is thus seen to depend on the place where the reaction occurs, which is not a very important point. The ferments are essentially complex chemical substances, able to bring about various reactions, nearly all of which are of exothermal character. Of the nature of many of these reactions we have pretty accurate knowledge, although of the exact mode of action of the enzyme itself our knowledge is scanty. For the present purpose, however, it is sufficient to recognize that these reactions are chemical and we are in a position to trace their bearing on medical problems.

"The simplest problems of enzyme action we have in the work of some of the so-called digestive ferments. In the changes wrought in starch by the saliva and by one of the pancreatic ferments the chemical action is one of hydrolysis and very similar to that occurring commonly in the vegetable world. In the germinating seeds, when starch becomes sugar to feed the developing plantlet, water is added through the aid of diastasic ferments, and later, in the ripening of many fruits the same kind of reaction takes place. These effects, however, are not peculiar to the enzymes; experiment shows that the same starchy substances acted upon by weak acids pass through the same series of changes occurring in the body, and even prolonged heating with water has the same general effect. The hydrolytic and purely chemical nature of carbohydrate digestion becomes at once apparent. What happens in the digestion of fats is equally simple. Here, too, hydrolysis plays the most important part and the work of the lipase enzymes can be duplicated in the vegetable kingdom and also in the laboratory by the aid of the simplest of inorganic reagents. A far more difficult problem for a long time was to account in any way for the changes taking place in the digestion of proteins. The presence of a proteolytic enzyme in the gastric juice, was recognized definitely by Brucke over forty years ago, and about the same time a substance called trypsin was found in the

extract of the pancreas. These substances acting on proteins under certain conditions convert them into a series of intermediate and end products about which an enormous literature has been developed. In the course of the long discussion it was discovered that many of the products which are formed by the enzymes may be obtained by the action of weak acids or alkalies, or water even, at an elevated temperature, on the original proteins, and finally, it was shown that an increase of weight follows in these cases as in the case of the addition of water to starch. All this evidently places the phenomena of protein digestion in the group of hydrolytic reactions, along with the much simpler starch and fat reactions. The digestion processes are, therefore, chemical, and the only thing about them which remains mysterious is the fact that from one set of body cells a ferment working in acid medium is produced, while from a second set of cells a somewhat similar ferment working in an alkaline liquid is secured."

MAREY'S LIFE WORK.

The death of the experimental physiologist Marey is another reminder of the progress made in our senses as well as in medicine during the last half century. His great work was the application of graphic methods to the study of animal movements. It was back in the sixties that he began inventing the registering apparatus for heartbeats, and the sphygmograph is now a classic instrument of observation. But for the general public his success in photographing successive animal movements have had the most striking results.

Let any one compare the prancing, symmetrically balanced steeds of Horace Vernet's battle pictures with the representations of horses in rapid motion made by artists since Meissonnier and he will see how great an education the human eye has received in a few years. Meissonnier painted before Marey's investigations, and all the critics fell foul of his horses. Marey proved that Meissonnier simply saw movements accurately and that the galloping steed of previous painters was usually as much a dream of the painter as are the crude drawings of children. He pointed out that the ancient Greeks had also seen the horse accurately in their sculptures. No one doubts it now, and we have all learned to look a little sharper and with more instant analysis.

It is true that the eye is not a photographic lens, but rather transmits to our consciousness something like a composite of the rapidly succeeding movements. But we have learned to look intelligently at nature in motion, just as impressionism has led us to attend more closely to the shades of color of nature in repose. Marey's work on the flight of birds in like manner showed that the Japanese artists had caught the truth of motion in the matter, and now our own designers have learned the trick. An accepted demonstration in mechanics was upset by one of his disciples who followed his methods and photographed sixty-five successive movements made by a cat in falling from a height, turning on herself in the air, and landing safely on her feet. Here, too, the popular notion was true and science had to revise its calculations, which was brilliantly done by a young French mathematician in his thesis for his doctor's degree.

Up to his death Marey was engaged in this visual interpretation of mechanical science, which has been so fruitful in his hands. I cannot appreciate here the immense sum of work accomplished in other lines by this typical Frenchman of science of devouring activity. His last writing was to urge the importance in traction vehicles of elasticity as an economizer of work. He has long been attached to the Agricultural Experiment School (physiological station), kept up by the French Government, and he had a laboratory at the College de France. With a moderate but sure maintenance and facilities for his special experiments and for the publication of results, his career has been one of ideal success, for the professor was devoted to his calling. Honors came to him thickly, and he had long been a member of the Academy of Medicine and of the Academy of Sciences.

YE OLDEN TIME DOCTOR.

The *Atlantic Monthly* some months ago published some leaves from the notebook of an old-time practitioner of medicine that are of great interest, and that bring home very well the differences of practice then and now. The experiences are told in straightforward fashion, with all the simple details that show their truth to nature and make them worthy to be preserved in the notebooks of those who are interested in the history of medicine. Of course the prominent feature of practice was as it always has been and doubtless will be an assumption of knowledge as to the exact diagnosis of disease which favored the persuasion of a hopeful therapeutics. Always general terms have been employed to cover a multitude of diseases and at the same time the ignorance of the physician. An impartial survey of the state of our own diagnosis and therapeutics will temper our ridicule of his. Perhaps it may even serve to inject a wholesome element of the doubt that happily leads to investigation and, consequently, to progress:

"I saw a vast deal of practice, I assure you. Besides children's diseases, we had quinsy sore throats and congestion of the lungs, as well as pneumonia, and what I wrongly pronounced 'Chilson fever.' But generally we diagnosed the case as liver trouble, and treated accordingly. Sometimes we gave calomel in pills, but we thought we got better effects from powders; the pills were so large and were so unevenly covered with a bitter powder,—and, though I became expert in rolling them, still they would bulge and stick and gag the people, who either could not swallow them, or else had later accidents,—that, as I say, we thought best of powders. And when I say powders, have you in mind a dainty paper with a pinch of salt, as it were, within its ingenious folds? Go to! Do you think we were mere homeopathists? We gave it in a teaspoon filled from a frequently replenished bottle carried in the doctor's capacious side pocket!

"This was the favorite medicine with patient and physician. No more grateful compliment came to the professional ear than the familiar 'I tell you, doctor, that last dose took hold right smart,' received with the complacent 'Well, I reckoned it would.' When salivation ensued, and the poor wretch had not a yellow tooth that did not rattle as he praised our skill, and the rebellious stomach refused to assimilate juicy spare ribs and the hot Sally Lunn, we gave him bumpers of bicarbonate of soda mixed with Brown's Essence of Jamaica ginger. He was taught that the disease was working out of the system, and that the ghastly symptoms were the inevitable sequelæ of a mysterious dispensation, which they probably were!

"We gave bushels of quinine, in tea to women, whisky, more plentiful than tea, to the men. I have spoken of calomel as the trump card which we played in the game with death, but I am not sure that we did not oftener take the trick with the lancet. We were hampered by no modern septicemic fears. The little instrument, arranged with an ingenious spring to prevent its opening, was carried in the vest pocket along with a plug of tobacco, a toothpick, and odds and ends of every sort. I doubt if there was a day we did not find use for it. We bled for headaches and fevers; we bled for congestion

of the lungs; we bled the negroes for their ills, generally designated by the generic term 'misery.'"

The touch that shows how high was the estimation in which the kindhearted old-time doctors were deservedly held is not lacking. One is tempted to wonder if with all our advance in medicine we do our patients as much good as our comparatively ignorant medical ancestors. They inspired the confidence they felt themselves in their remedies and that is half the battle of therapeutics. When they could accomplish nothing their never-failing sympathy almost made up for their lack of effciency and won them tender places in the regards of their patient, such as are not won by their more skilful brothers of succeeding generations. The whirligig of time brings in its revenges, but there are compensations always.

"It was etiquette with us that when a doctor fell ill the oldest physician in the town should have charge of the case, while all the others came in in consultation. There were thirteen in this town of less than three thousand inhabitants, and they all went through that sick room, following Dr. Ireland, the dean, and looked wise. Then the doctor sent for me. He said there was no luck in odd numbers, and, more than that, I understood his constitution! I spent many hours with him, and we talked of everything except medicine.

"But he did not get well.

"'I think some men have to get sick to get rested,' he said one day, when my face must have showed what I feared,—for, indeed, I feared greatly, most of all because he took no medicine. So at last I spoke. 'Doctor,' I said, 'would calomel or jalap do? Or, I know how to bleed.'

"And the old fun flushed his face as he said, 'Doctor, it wouldn't be etiquette without Dr. Ireland. Besides, dear little boy, burnt brandy wouldn't help me now.' The next day he died.

"The town was as full of spring carts and buggies and saddle horses the day he was buried as if it had been the day of the county fair. The negroes, breaking the bonds of their Protestantism, prayed aloud in the streets for his soul,—and the clergyman said: 'This man sought neither riches nor honor, but gave himself for others. Fifty years from now his name may be a faint memory, but I think he was one of those whom God depends upon to keep the world good, and to bless little children by his gentleness and purity and cheerfulness.' And all the people said, 'Amen.'"

THE CIRCULATION OF THE BLOOD.

THERE is nothing more interesting, as there is certainly nothing more promising, than the many references in present-day medical literature to discoveries in medicine made long before the date usually assigned for such discoveries. There is at the present time a very sympathetic rereading and rewriting of passages of medical history in such a way as to give due credit to many patient faithful investigators of the olden time who found in their observations much more of truth than is usually supposed to have been possible before distinctly modern times.

The Harveian Oration in England was founded with a distinct idea of having an address delivered each year before the Royal College of Physicians of London on some subject connected with the circulation of the blood. It is especially encouraging then for those who are interested in truth for its own sake in medicine to find that the last deliverer of the Harveian oration, Dr. Richard Caton, the emeritus Professor of Physiology at the University of Liverpool, in fulfilling his task in this matter touches upon observations nearly related to the discovery of the circulation of the blood in Egypt some 5,000 years ago.

Dr. Caton dwells particularly upon the benefits conferred upon medicine by a learned physician who lived during the third dynasty about 3,500 B.C. He attained such eminence that in the course of subsequent ages he was deified and became for later generations the special god of medicine under the name of I-em-hotep, which means "He who cometh in peace." Later he became one of the great god triad of Memphis, and is described as "the good physician of gods and men, a kind and merciful god assuaging the sufferings of those in pain, healing the diseases of men, giving peaceful sleep to the restless and suffering; he is called the creative god, who giveth life to all men, who comes unto them who call upon him in any place and who gives sons to the childless."

Dr. Caton considers that the very early Egyptians practically discovered all that the Greeks subsequently knew about the functions of the heart and of the blood, and that it is indeed to their discoveries and not to actual observation that the Greeks owe what has come to be attributed to them by later generations. He said:

"It is of some interest to note that these priests of I-em-hotep, themselves learned men, not only saw and prescribed daily for vast numbers of sick persons, but also performed innumerable necropsies. They removed the heart, large blood vessels, viscera and brain from the bodies of diseased persons, also from the bodies of sacred animals, prior to embalment; the heart was placed in a separate jar by itself and the remainder of the viscera in a larger vessel; thus these men had an opportunity of learning something of anatomy; they may have gained some insight into the intricate problem of the action of the heart, the movement of the blood, and the changes of heart and vessels produced by disease; no nation of antiquity had such opportunities. Did they discover anything? I think I can demonstrate to you they did obtain a partial knowledge of the circulation; they did not solve the problem, but they approached it as nearly as did the Greeks, and probably from them the Greeks obtained such knowledge as they possessed in early times."

Of course all question of the circulation in early times were found to contain not blood but air, and that they were supposed therefore to be channels through which was obscured by the fact that after death the arteries the air of the lungs found its way to various parts of the body. Dr. Caton quotes, for instance, some comments from the early papyri which go to show how much more can be found by a sympathetic reader in these old medical documents than our distant predecessors in medicine were ever supposed to know. As a matter of fact there are some things in which there has been no advance even down to our own day. He said to his audience in the Harveian oration:

"Let me read you one or two extracts from the work of the Pharaoh Usaphais, quoted in Eber's papyrus: 'Man hath twelve vessels proceeding from his heart which extend to his body and limbs, two vessels go to the contents of his chest, two vessels go to each leg, two to each arm, two vessels go to the back of the head, two to the front of the head, two branches go to the eyes, two to the nose, two vessels go to the right ear, the breath of life goes through them, two go to the left ear and through them passes the breath of death; they all proceed from the heart.' The concluding sentence is the earliest example I know of the ancient superstition that the left side of the body is sinister and evil. This is very early anatomy, professing to be at least 6,000 years old; we must not expect it to be quite accurate. Turning to a comparatively recent period the only copy existing of Eber's papyrus (found in a tomb at Thebes) was written in or before

the sixteenth century B.C. No doubt most, if not all, its contents are much older than that date. The passage which I am about to read commences: 'From the secret book of the physician a description of the action of the heart and of the heart itself. From the heart arise the vessels which go to the whole body; if the physician lays his finger on the head, on the neck, on the hand, on the epigastrium, on the arm or the leg, everywhere the motion of the heart touches him, coursing through the vessels to all the members' (the reference is clearly to the pulse); thus the heart is known as the center of all the vessels. Four vessels go to the nasal chambers, of which two convey mucus and two convey blood. There are four vessels within the temples or skull. From these the eyes obtain their blood. The four vessels divide inside the head and spread toward the inner part.'

"The Berlin papyrus speaks of the division into thirty-two vessels within the skull and implies that air traverses at any rate some of them. Returning to Eber's papyrus, 'When the breath enters the nostrils it penetrates to the heart and to the internal organs and supplies the whole body abundantly.' This idea that certain of the vessels convey air you will observe is identical with the Greek conception and probably was its source: 'Three vessels traverse the arms and extend to the fingers, three vessels also pass down the leg and are distributed to the sole of the foot, a vessel goes to each testis and one to each kidney. Four vessels enter the liver, conveying fluid and air; these may be the seat of various diseases as they are mixed with the blood; four vessels convey fluid and air to the intestine and spleen; two go to the bladder and from them the renal secretion is produced. Four vessels convey fluid and air to the lower abdomen, going to the right and left sides; from them is formed the alvine excretion.' The vessels here described are clearly the iliac arteries and veins. 'When the heart is diseased its work is imperfectly formed; the vessels proceeding from the heart become inactive, so that you cannot feel them' (no doubt this is a reference to changes in the pulse), 'they become full of air and water. When the heart is dilated the vessels from it contain effete matter. If a suppurative or putrefactive disease occur in the body' (abscess, I imagine, for which various sites are suggested) 'then the heart causes it' (apparently the purulent material) 'to traverse the vessels, fever or inflammation of various kinds occurs in the body, the heart is in a morbid state while the fever continues. In heart disease there is either disturbance of the action of the heart or the heart is congested or overfilled with blood, the heart is moved downward, comes nearer the precordia, and suffers weakness and nausea. When the disease affects the base or lower mass of the heart there is shortness of breath, the heart is displaced on account of the volume of blood from the abdomen' (probably the old idea of the rush of blood entering the heart from the liver). 'There may be fever or inflammation of the heart.' Now here comes a passage of some therapeutic interest. 'The heart during such disease must be made to rest to some extent if it be possible.' Here we have wise advice from the ancient Egyptians, advice the importance of which we have scarcely as yet recognized and which we may to-day follow with advantage. 'If the heart is atrophied (or wastes itself) there will be an accumulation of blood within it. When the disease of the substance of the heart is accompanied by dropsy there is a lessening' (in strength probably) 'in the ventricle or cavity. When the weakness of the heart is due to old age there is dropsy. When there is raising or increase of the heart it presses toward the left side, it is increased by its own fat and is displaced; there may be much fat contained within its covering or pericardium. If in a suppurative disease the heart is pushed forward it floats or sinks in the fluid and is displaced.' Here we surely have a reference to pericardical effusion. 'If the heart trembles or palpitates, has little power, and sinks downward, the disease is advancing. When there is much beating at the precordia, with a feeling of weight, when the mouth is hot and languid, and the heart is exhausted the disease is a fever or inflammation.' In another place (folio 102) the heart is spoken of as being full of blood, which comes or flows from it again. In folio 39, after a description of symptoms, follows a statement to the effect that the heart is distended, the sick man is short of breath, because the blood has stagnated and does not circulate. This is an interesting expression, but judging from other parts of the papyrus the word tanslated circulate can only have a vague meaning, implying movement to and fro, just like the expression περιόδος αἱμάτος in the Hippocratic writings, which seems to imply the circuit of the blood, but in reality has only a similar indefinite meaning. It is evident that the Egyptians knew that blood flowed from the heart, but, like the Greeks, they never seem to have realized that the heart is a pump, nor did they recognize valves."

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, held Thursday, May 19, 1904.

The President, Andrew H. Smith, M.D., in the Chair.

Fever Curves of Scarlatina and Measles.—Dr. A. A. Berg said that the fever curves of measles and scarlet fever are quite as typical as those of typhoid fever or smallpox. This is not usually stated in the text-books, but will be found absolutely true in typical cases. There is the stage of accession, that of fastigium and that of defervescence. Each of these may occupy from hours to days. The beginning of fever is sometimes spoken of as prodromal, but it does not precede the eruption which is already present on the mucous membranes. In the eruptive stage it must not be forgotten that the fever is first enanthematous and then exanthematous. In measles, during the enanthema, the pyrexia is marked and it may last for from two to five days. Then there is a sharp decline. On the first day of the exanthemata in measles the pyrexia is one degree higher than before. On the next day it is still a degree higher. Usually on the third day it is at its highest and only then is there a drop. The drop is always noticed to occur in the morning.

Scarlet Fever Curve.—The febrile curve of scarlet fever is much simpler, yet it is characteristic. The enanthematic eruption is followed by the exanthem in six hours to, at most, a day. The top notch of the fever is reached on the first day of the enanthem. This never occurs in measles. The exanthem is followed by a drop of two or more degrees. When the eruption is extensive, the temperature may rise half a degree more, but the defervescence is usually maintained. Scarlet fever declines by lysis and never resolves by crisis. The access is sudden and the fastigium lasts from five to six days with staircase descent. Scarlet fever is said to occur occasionally without fever, but this Dr. Berg has never seen. The curves of these diseases are always typical, and whenever there is a departure from the normal some reason for the exception can be found. When the decline of the fever in measles does not take place by crisis, some complication may be looked for, usually pneumonia or nephritis. An irregular curve should always give rise to suspicion. When regular

descent by lysis is interrupted in scarlet fever, a complication should be feared. The temperature curve may readily be made a test for the value of antitoxin. The normal curve in diphtheria is easy to recognize, and after the administration of antitoxin there is a critical defervescence which takes place in twelve hours. This is quite an exceptional incident in the fever curve and indicates the thorough effect of the serum. No such critical defervescence occurs after the administration of Marmorek's or Moses's serum for septic infection, showing that the action is evidently of quite different nature. High fever in children's diseases may require treatment. Cold or cool baths or cold sponging or cold packs are the most recommended. Antipyretic drugs are scarcely justified in children. The temperature cannot be reduced as in typhoid fever or pneumonia, for the reaction of the cutaneous circulation is different. The patient's nervous system can be calmed best, however, by hydrotherapy. Owing to the irritation of the skin, the capillaries are much more dilated and will not contract under the influence of cold. Hence, there is neither the primary contraction nor the secondary dilatation seen in other fevers. It must not be forgotten that the blood is loaded with toxins and that the eruption is eliminative in character. Accordingly the encouragement of gentle perspiration in mild cases by a warm bath with a dry pack will often be found very efficient.

Technic of Bathing.—The bath should be given at about 80° F., not lower, and raised to 90° while the patient is kept in it for ten minutes longer. This makes a warm bath, though the temperature of the water is lower than that of the skin. Then the patient should be wrapped lightly in a sheet or light blanket and put to bed. In order to have the warm water mixed properly with the cooler water in the tub, when the temperature of the bath is being raised, the warm water should be poured to the bottom. No rubbing should be practised, as in typhoid fever, as this will only cause premature desquamation and practically produce small ulcers. A large, soft sponge may be used, or the skin may be patted with a soft towel.

Curve of Enanthemata.—Dr. Koplik said, in discussing the paper, that as yet the curve of the enanthematic stage of the fevers is not known. The prodromal curve of the infectious fevers is not characteristic, and from a look at the temperature sheet a little patient might easily be suffering from tonsillitis, when one of the infections would be suspected. That there is a critical drop of the temperature in measles has long been known and classical cases are reported in the text-books. Uncomplicated cases, however, do not always conform to the type, and notwithstanding febrile anomalies there may be no complications in the ears, throat, lungs nor gastro-intestinal tract. Suspicion should always point however, to one of these. Dr. Koplik has never seen a case of measles without a temperature, though in one typical case the temperature was only 99.8° F. by the rectum. When scarlet fever drops very slowly, an enlargement of the lymphatic glands may be found, usually due to an acute dermatitis. There are so many variations from the type, however, in different ways that the temperature curve cannot be considered of great value in diagnosis or prognosis. The therapy must not be based on the thermometer, for cases are very individual and some children suffer severely at a temperature at which others are quite comfortable.

Postcritical Temperature.—Dr. Lambert said that in measles there is usually a distinct crisis, but it is not uncommon to have a rise in temperature afterward up to 100° or 101° F. without complications. He has seen two cases of typical measles run their course without temperature. They had complete desquamation in six weeks and yet at no time was the temperature curve above 99° F. Scarlet fever may come down very slowly and yet no complication be present. The febrile course may be two weeks without complication. In such cases desquamation goes on during the febrile period and the patients need to stay no longer in the hospital. The temperature of scarlet fever is as irregular as typhoid, and Delafield said that nothing was too irregular for typhoid.

Opposite Febrile Charts.—Dr. Northrop said that the fever of measles and scarlet fever is quite typical, so that it is possible to write the chart beforehand in most cases. If the charts are on lantern slides it would be only necessary to start them from different ends in order to have the different courses of the two diseases. A combination of the two makes a typical smallpox chart. Antipyretic treatment should be directed not by the thermometer, but by the patient. There need be no fear that the eruption will strike in because of the application of water. It is important in these cases to keep the feet warm and the head cold.

Dr. Berg, in closing the discussion, said that some children play lustily with a temperature of 103° F. The measles fever chart has its exceptions, of course, but it is as typical as typhoid. The point in bathing that Dr. Berg would insist on is that the temperature should be raised at the end, beginning at lukewarm. This is better than the bath at 70°, or even 60° for reducing temperature.

Definite Information as to Radium.—Dr. H. G. Piffard said that there has been a vast amount of misinformation furnished by the daily and weekly press with regard to radium, and that as a consequence there is a reaction against the possibility of its being of any benefit in medicine, which is not justified by the true results of investigation. The radium rays consist of three kinds, the alpha, beta and gamma rays. The alpha rays exist in the largest proportion, but have very little penetrating power. The beta rays are smaller in amount, but have more penetrating power and, in Dr. Piffard's opinion, are like the cathode rays of Crookes's tubes. The gamma rays seem to be the same as the X- or Roentgen rays, existing in small amounts but have great penetrating power. The alpha rays are affected by a magnet, being attracted to it. The beta rays are also affected, but are deflected; the gamma rays are non-deviable by magnetic attraction. Besides the radiations there is an emanation from radium. The emanation from radium consists of material particles and is not merely a disturbance in the ether, as are the radiations. If the emanations are allowed to continue for several days the substance given off proves, on careful investigation, to have the properties of what is known as element helium. This is a material found first in the sun, and hence called helium from the Greek word for sun, but which has since been discovered also on earth. These emanations will not pass through glass, though needless to say the radiations will penetrate it to a considerable degree. The main source of radium is pitchblende, a material found in abundance in Austria but also in various parts of this country. The French physicist Becquerel found that there was something in uranium derived from pitchblende which effected a photographic plate, when presumably the plate was thoroughly protected from chance exposure by a light-tight cover. Madame Curie, in the course of some investigations of pitchblende, found a substance even more radio-attractive than uranium and, later, discovered radium. At the present time it seems not unlikely that radium is a definite element, though probably polonium is only a chemical compound with borrowed radio-active

properties. It has been thought to be a disintegrating product of radium, or a radio-active compound of bismuth, or tellurium. The fact of radiation can be discovered by means of a photographic plate, but the amount of radiation is much harder to determine. By means of an electrometer, however, substances having radio-activity up to 100,000 or even 200,000 Ms. as the term is, that is, having that many times the radio-activity of the same amount of uranium taken as a unit, can be measured. For higher powers of radio-activity chemical data are the only ones available.

Glow in Darkness.—Neither the emanations nor the radiations of radium are properly responsible for its glowing in the dark. This may be due to the presence of some other substance, such as barium. It may, however, be due to the effect of radium on the nitrogen of the air. The spectrum of the glow of radium is almost the same as that seen from nitrogen under certain conditions. Radium has the power of exciting fluorescence and phosphorescence in other substance. As a sequence of this the placing of a phial containing some radium in water was supposed to render the water radio-active. This was claimed to have possibilities of wondrous effects in medicine. These claims, however, are absolutely groundless. No radio-activity can be produced by the exposure of water to radium in this way.

Absorption of Rays.—Radium kept in glass tubes is not in the most favorable condition for it to exert its activity, since the glass absorbs most of the radiations. Besides, if there is the slightest flaw in the glass, the emanations from the radium gradually force their way through and for a time the metal loses its radio-active power. Aluminum makes a much better container than glass, for such a tube will not rupture, but the emanations succeed in leaking through even the pores of the aluminum. Hence the aluminum tubes are enclosed in silver tubes. Something of this difficulty can be overcome by an arrangement to modify electric tension by sealing a platinum wire into the tubes.

New Elements.—The discoveries with regard to radium and cognate substances have given rise to new enthusiasm for certain forms of chemical investigation. As the result two new substances, carolinium, named after the State of North Carolina, and berzelium, called after a Swiss chemist, have been discovered in thorium. These are the radio-active substances in thorium, which is very familiar as the substance that glows in Welsbach mantles. Pure thorium itself is not radio-active. Physical investigations have also shown a number of interesting facts. Alpha rays are very probably positive electrons, that is, material particles having about twice the size of the atom of hydrogen. Beta rays, on the other hand, are subatomic bodies, negative electrons having a constitution about equal to 1-1000 of an atom of hydrogen. Gamma rays are undulations in ether and are probably not corporeal. The beta rays or negative electrons have the same character, in Dr. Piffard's opinion, as the cathode rays, but have a greater velocity. It is the cathode rays that occur with the X-rays which Dr. Piffard believes to be the cause of the so-called X-ray burns. Radium itself is really a transcendentalized pocket edition of the X-rays. The substance to be obtained with any assurance must be bought of a reliable firm, for Dr. Piffard has found that in one place at least radium sold as having forty M radio-active power, proved, on investigation by himself and confirmation by Madame Curie's laboratory, to have less than one M of radio-active power.

Therapeutic Value of Radium.—Dr. Robert Abbe said that as the result of the reaction from the exaggerated claims for the therapeutic effect of radium there has come a state of nihilism with regard to its effectiveness in medicine and surgery. Dr. Abbe, however, is firmly convinced from personal observations that there is much in radium that is likely to be useful especially in surgery, and considers that it would be a great misfortune if its investigation was to be given up. It is a very subtle powerful agent acting on cellular energies in remarkable ways and coming somewhere between the X-rays and Finsen rays in efficiency as regards modification of biological processes. The study of its effect on cell life is very striking. If twenty seeds be exposed for four days near a tube of radium and twenty other seeds for two days and twenty further seeds taken as controls and all sixty planted, those that have been exposed to the radium will be very much retarded in their growth, the seeds that have been longest exposed being most retarded. Just what has taken place in the seedling is very hard to determine, but the effect is easy to see.

Effect on Animal Life.—If the grubs of certain insects be exposed to radium a very curious result ensues. Some of the grubs will die, others, however, will be rendered somewhat sluggish in their movements, but the most curious effect will be a failure to go through the ordinary transformations which would make of them successively pupæ and winged insects capable of reproducing their species. If meal worms, for instance, are exposed to radium for some time, intsead of entering on the pupa stage and then developing into beetles, they will remain as meal worms and continue to feed, while control meal worms that have not been exposed to radium will become beetles, laying eggs which in turn become meal worms and then beetles for three or more generations. The original exposed meal worms are still alive—Methusalas of their species—showing no tendency to go through the cycle of development natural to them. These facts are most interesting for the physiologist and for the physician and surgeon who are brought face to face with the problem of the reduplication of cells which brings about the process known as malignant growth.

Effects on Healthy Skin.—Dr. Abbe exposed the healthy skin of a patient suffering from slow running cancer, which did not require immediate removal to the action of radium. The result was a destruction of cells for a quarter of an inch beneath the radium. In portions of tissue affected by the malignant growth the nests of cancer cells were found to be disorganized and destructive necrosis with liquefaction or melting away of the cancer tissue was found to have occurred. In a large recurrent nodule of carcinoma, nineteen applications of radium in a period of three months reduced the growth to one-third of its original size. A portion of this removed, showed the occurrence of fibrous induration and a great reduction in the number of nests of cancer cells, though some of the true cancerous material still remained. In the treatment of a giant-cell sarcoma of the lower jaw in which only a shell of bone was left and three teeth were loose, exposures to radium, the tongue being protected by lead, gradually brought about great improvement. The exposures were made three hours at a time for fifteen applications and the patient is now apparently cured. The progress of the disease has ceased and its growth has been retarded evidently in something of the same way as that of the seeds and the meal worms.

Other Therapeutic Uses of Radium.—Some milder affections yield promptly to radium. Dr. Abbe has seen a case of long-standing lupus cured by one application. Warts can be made to disappear like magic after a single exposure to a reasonably strong radio-active sample of radium. Nests of warts such as

occur in certain persons, have been made to disappear in four applications. The use of it produces a retrograde metamorphosis that leaves absolutely no scar after it and gives the best possible cosmetic result in such cases. Dr. Abbe has found this true also with regard to cancer nodules and in the case of the sarcoma of the jaw. The result is better than could possibly be obtained by any surgery, however careful. Of course it is possible that growths may recur. The use of radium repeated will doubtless do what it did at first; if it does not, then something can still be accomplished by the use of the knife and the patient is, as a rule, in no worse condition than at the beginning of treatment.

Radium and Parthenogenesis.—Dr. Piffard, in closing the discussion, said that undoubtedly investigation will bring out very clearly the value of radium. The present nihilistic reaction is unfortunate, but is as far from the truth as the exaggerated significance originally given to the material. To offset Dr. Abbe's description of the effect of radium in retarding reproduction, Dr. Piffard said that it had been found that the exposure of certain of the ova of the lower animal forms to radium brought about their growth without conjugation,—that is, gave examples of parthenogenesis where normally these did not occur. This is of course only what Professor Loeb succeeded in doing with certain chemical irritants at the University of Chicago, but it shows the profound modification of biological processes that may be brought about by radio-active influences.

BRITISH MEDICAL ASSOCIATION.[1]

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

(Continued from Page 384.)

In the newer ships refrigerating rooms are now supplied, and by this means fresh provisions may be carried, especially for short sea trips. As regards the nutrient value of the naval dietary, if one only takes the daily ration of beef, bread, vegetables, and sugar, each man is supplied with 291 gr. of nitrogen and 5,425 gr. of carbon; this, with the other ingredients of a sailor's dietary, comes well beyond the limit laid down by Parkes and Playfair of 307 gr. of nitrogen and 4,700 gr. of carbon, which an average man gives off in a day. It is also very much beyond the scale allowed to convicts doing hard labor (263 gr. of nitrogen and 5,003 gr. of carbon).

Meal Hours.—Since October 1, 1903, the Admiralty have recognized five meal hours, the aggregate time allowed being three hours, thirty-five minutes, instead of two hours, thirty minutes allowed by the old system for three meals. The meal hours are: An issue of cocoa on turning out at 5 A.M.; breakfast at 8 A.M.; dinner from 12 to 1:15 P.M.; tea at 4:15 P.M.; and supper at 7:30 P.M. These hours are very well arranged. In the tropics it is customary to have a two-hour dinner hour, with light work afterwards, the heavy drills being got through as a rule before breakfast.

Medical Officers with Regimental Unit in the Field.—Major T. D. F. Donegan said that the distribution of medical officers in the field is, to say the least of it, a difficult problem and one which requires a great deal of thought and consideration. In the various returns which go in to higher authorities the allotment of these officers is referred to, and it is quite natural to suppose that a practical distribution may not appear to be a right one to officers far away in a high administrative capacity. The senior medical officer of a force should have power to utilize his medical officers as he thinks best, and to send them where they are wanted, instead of the present cast-iron allotment per regiment. The duties of a regimental medical officer in the field are as follows: (1) To be with his unit under fire in charge of regimental bearers; (2) to see the morning sick of his corps, and to send such sick, other than those suffering from minor ailments, to the brigade field hospital; (3) to attend to the sanitation of the camp, as far as it pertains to his own unit. Now the first of these is to his mind the most important duty, therefore if the unit is not likely to be detached by itself it does not require a medical officer, as its sick could be seen by the nearest bearer company or field hospital, sanitation could be attended to by a brigade sanitary officer, and its actual wounded in the field could be looked after by the bearer company. His proposal is the modified one as follows: With an ample supply of medical officers, when the establishment of bearer companies and field hospitals is complete, when casualties in either of these units are provided for, then to post to each unit a surplus medical officer on the understanding that his appointment is temporary and that he can be withdrawn the minute he is required elsewhere. As regards the equipment issued to these officers, it is at present excessive. Field panniers with operating cases are cumbersome, unnecessary and useless, as assistance is always required before any operation can be done. As the hospitals or bearer companies are the places for operations there is no necessity for a single medical officer to carry, regimentally, the equipment necessary for amputation at the hip-joint, as the only thing he may ever have to do single-handed would be the ligature of an artery, and, perhaps, the relief of a strangulated hernia. If the present field panniers contain more than is necessary, the field companion (and its own companion the water bottle) is hardly enough. In his report on the Eighteenth British Field Hospital in South Africa, he suggested that the regimental medical case should contain as follows: Modern tooth instruments, a surgeon's pocket case, some Spencer Wells forceps, retractors, tourniquets, ligatures in bottle, chloroform in capsules (as used by Boers), two waterproof sheets, two small dressing trays, some antiseptic tabloids, adhesive plaster, bandages and dressings, and syringes. For medical assistance the following may be added: Two thermometers, one aluminum stethoscope, one hypodermic syringe, with spare needles, a tabloid case of medicines, and a strong candle reading lamp, some spare bandages in waterproof bags, some surgical dressings, and some medical comforts would also be required.

He further spoke of hospital and ambulance service equipment.

Sterilization of Infective Discharges and Utensils on Field Service.—Lieutenant-Colonel A. M. Davis, in dealing with this question, said that the best mode of dealing with infective discharges, when on active service in the field, will probably vary according to circumstances; it will not be advisable to lay down one hard-and-fast rule to be of universal application. The four following methods are the only ones that are likely to be carried out in practice: 1. Burial in earth, either in deep or shallow trenches. 2. Treatment with disinfectants, followed by burial. 3. Sterilization by moist heat, followed by burial. 4. Destruction by fire—that is, incineration.

(1) Burial in shallow trenches (less than 24 inches in depth) is better than scattering the dejecta about on the surface of the ground, but is not to be recommended if it can possibly be helped. Burial in deep trenches (over 2 feet) is not so likely to pollute the

[1] From advance sheets of the *British Medical Journal*, by courtesy of the editors.

air, but will pollute the soil quite as much as burial in shallow trenches; indeed, more so, and for a longer time; this also is not to be recommended.

(2) Treatment with disinfectants, and then burial, lessens the risk of polluting the soil and air; but it is difficult to ensure their thorough application to solid excreta, and the length of time required for the complete action of moist disinfectants (necessitating the retention of the excreta for perhaps some hours) causes great practical inconvenience. Although better than simple burial, this method is not to be recommended if it can be helped.

(3) Sterilization by moist heat—that is, boiling—is undoubtedly efficient. All pathogenic bacteria that come under practical consideration are entirely destroyed by a temperature short of boiling. Solid and liquid excreta, infected ablution water, utensils of all kinds that have been fouled (bedpans, urinals, spitcups, etc.)—in short, everything that is infective can be rendered innocuous by this method. Two points are to be borne in mind. (1) the quantity of fuel required is large; and (2) the material disinfected (or at any rate a considerable proportion of it) remains to be disposed of, by burial or otherwise.

(4) Destruction in a furnace, that is, incineration, also requires a considerable quantity of fuel; but the offensive matters are rapidly and completely destroyed, leaving nothing that needs to be removed for burial. This method is equally as efficient as the last mentioned, so far as it goes; and the choice between the two resolves itself into a comparison of (*a*) quantity of fuel required, (*b*) extent of applicability or degree of usefulness, and (*c*) ease and inoffensiveness of working in each case.

(*a*) The quantity of fuel required should be less in the case of a destructor or incinerator than in the case of a boiler, because dry rubbish of all kinds can be used as fuel for a destructor. The saving of fuel is, however, not so great as might be expected, because (1) the temperature to be attained in a boiler is only 212° F. (=100° C.) at the most, while in a destructor a temperature of at least 850° F. (=450° C.) must be reached in order to actually burn up the material. (2) The presence of even a small quantity of moisture in the substances to be burned adds largely to the quantity of heat required (that is, fuel necessary); for, whereas to raise a pound of water from the ordinary temperature (say 15° C.) to boiling temperature (100° C.) requires 100—15=85 units of heat, to convert that pound of boiling into steam (which, of course, is a necessary preliminary to incineration) requires 537 units of heat, making a total of 85+537=622 units of heat. (3) If incineration is attempted, the high temperature must be maintained until everything is burned up, which in practice leads to the consumption of a great deal of fuel, much more than the theoretical quantity required; in the case of boiling when the temperature is once reached, a very small amount of fuel is required to maintain any given quantity of water at that temperature. From these considerations it appears that the saving of fuel would be slight, if any, in the case of incineration.

(*b*) As regards extent of applicability, or degree of usefulness:—Boiling renders harmless (1) all infective discharges of whatever description, liquid or solid; (2) infected ablution water; (3) infective utensils; but it does not deal with (4) ordinary non-infective excreta; nor with (5) rubbish or dry refuse; and (6) the infected discharges and ablution water remain (after disinfection) to be taken away and buried, or otherwise disposed of. A considerable proportion, however, of the fluid is got rid of in the form of steam.

Incineration destroys (1) all rubbish and dry refuse matter; (2) solid excreta, both infective and ordinary: and (3) some proportion of the liquid excreta (the amount depending on the size of the apparatus); but it does not deal with (4) infective liquid discharges, urine, etc. (if large in amount); nor with (5) infected ablution water; nor (6) infected utensils.

Ablution water and slops must, however, necessarily be removed from the immediate neighborhood of a properly managed hospital, in any case; and it is certainly better that they should be removed in a disinfected than in an infective condition. It is true that liquid disinfectants might be used to render them innocuous; but disinfection by heat is safer, and where fuel is procurable is to be preferred. The same may be said in regard to utensils. Assuming then that liquid sulliage has to be removed in any case, the additional bulk of material to be removed, if boiling be the method adopted, (that is, solid excreta that would otherwise have been incinerated) is practically negligible. There remain the cost and labor of removing rubbish and dry refuse, and ordinary non-infective solid excreta; this has to be set against the cost and labor of their incineration.

(*c*) As regards ease and inoffensiveness of working: Indian experience is unfavorable to the use of incinerators for destruction of excreta; very numerous patterns have been tried during the last fifteen years, and in no case has a thoroughly satisfactory result been obtained. In South Africa, however, they were used with success in many instances. But the preponderance of medical opinion, derived from South African experience, appears to be in favor of boiling as compared with incineration.

In circumstances where fuel is scarce, any form of heat disinfection may be impracticable; in such cases, deep burial, after treatment with chemical disinfectants, is to be recommended for infective discharges, etc. But if fuel is available, moist heat (that is, boiling) appears to be, on the whole, preferable to dry heat (that is, incineration).

The apparatus that has been devised by Major H. A. Cummins, C. M. G., R. A. M. C., for disinfecting excreta and utensils by boiling, is convenient in form, portable and easily worked. There is no smell during the process of disinfection. It is estimated to be capable of dealing with the excreta, slops and bedpans, of about 100 acute cases of enteric fever during the twenty-four hours. Its weight is 2 cwt. 3 qr. 24 lb. (say 3 cwt.), and its over all dimensions are 3 ft. 6 in. by 4 ft. 9 in. Experiments have shown that in ordinary weather about 50 lb. or 60 lb. of coal suffice for a working day of eight hours; in windy weather about 80 lb. of coal are required. Wood or other fuel may also be used.

The Recruiting Problem.—Major W. C. Beevor, in a paper on this subject, brought out the various difficulties encountered in Great Britain. As the problem is distinct from the American problem, we omit further consideration of his interesting and suggestive paper.

(To be Continued.)

OBSTETRICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, April 7, 1904.

The President, Dr. R. C. Norris, in the Chair.

New Operation for Puerperal Sepsis.—This paper was read by Dr. Swithin Chandler, who, after making a few preliminary remarks regarding the causes of puerperal sepsis, described his new operation for puerperal sepsis as follows: Make an incision posterior to the cervix in the posterior vaginal wall; then pass a pair of long blunt-pointed forceps, slightly curved, in the cervical canal, up into the cavity of

the uterus; then puncture the posterior wall of the uterus in the center near the top of the uterus. Then introduce with two fingers a piece or strip of iodoform gauze in through the posterior vaginal opening previously made, clasp the gauze with the forceps and drag the same through the uterine wall and out through the vagina. Repeat this by puncturing the uterus on each side, but posterior and just about the middle of the body of the same, drawing the gauze through the same as in the first attempt. Thus one will see the uterus is treated as a thoroughly infected organ deserving heroic treatment. He then gave a few statistics regarding the mortality of other operations in puerperal sepsis. The objections which he thought might possibly be offerred to his operation were: (1) All cases are not those of virulent infection; (2) it causes additional injury to an organ infected; (3) curettage and removal of membranes are often sufficient; (4) it may so injure the uterus as to interfere with labor.

Regarding the first objection it is admitted he would not always advise its immediate undertaking. As to the second objection, while it makes more injury, no hesitation is felt in opening an infection in other organs, and one has no more infection, and experience in this operation is similar to operation in other parts. To the third objection, as to the first, he would answer, if one is prepared to operate immediately if required, well and good. In answering the fourth objection, as yet he cannot say, but he does not believe it would have any bad results, especially after knowledge of how the uterus is treated by the inexperienced in curettage, removal of growths, etc. In favor of the operation Dr. Chandler claimed the following: (1) It is conservative; (2) it is by the experienced easily performed; (3) it is logical, because it treats the organ as an infected part, gives drainage to the uterus and those tissues and vessels shown by post-mortem examinations to be affected; (4) the mortality is greatly lowered, and it gives far superior results so far, although its exact results must yet be proven by a larger number of cases than as yet I have practised upon.

Dr. Chandler closed his talk with a report of a few cases operated upon in the manner above described, a description of the results obtained, etc. (See MEDICAL NEWS, August 6, 1904, for Dr. Chandler's paper.)

Dr. George M. Boyd said, in the discussion, that every contribution to the treatment of puerperal sepsis is of interest. He said that this method and the method which has been described by Dr. Pryor had seemed, in his opinion, heroic treatment in this class of cases. We occasionally have a death from puerperal sepsis, but the majority of cases recover. Many of the bad cases have a general systemic infection with only a local manifestation of infection. In the cases that have not recovered he has felt that the infection was beyond the uterus and that the patients died from a general systemic infection. He is not prepared to endorse the operation that has been suggested.

Dr. W. Reynolds Wilson, in the discussion, said he had always felt that the way to approach this subject is from the point of view of diagnosis. To be sure, there are cases that are desperate, and cases which will require what Dr. Boyd has chosen to call heroic measures, but it is very difficult to diagnose such cases in time to carry out such an operation. The bacteriological study of the case, he thinks, is extremely important. The localized pelvic infections with the presence of the staphylococcus and lympatic engorgement involving the parametrium are cases which in the beginning present very severe symptoms, but which when properly treated by non-surgical means usually make a very rapid recovery. At the same time it is difficult to differentiate these cases from cases of overwhelming rapid infection, infection which begins early and which spreads into the system before we are able to institute any local treatment. That being the case, it seems to me there is required a very acute knowledge of the course of such infection, a knowledge which most obstetricians will find it very difficult to get. He thinks there is not enough infection nowadays to make it possible to draw the fine lines in diagnosis. He can understand perfectly well that the uterus may be the site of infection, that pelvic drainage may in certain cases interfere with the further spread of the disease. At the same time his mind is recalled to the first case that Dr. Chandler described, in which a mass of the placenta was removed under ether and in which he performed the operation. In that case it would be extremely difficult to tell whether the removal of the placenta itself might not have been sufficient to relieve the symptoms altogether.

Dr. R. C. Norris, in the discussion, said he had listened very carefully to Dr. Chandler's paper, and he thinks its gravest defect is his failure to indicate the class of cases requiring this kind of treatment. The same objections, intensified, are applicable to this treatment as to Pryor's operation. Pryor distinctly limits his to streptococcic infection, Dr. Chandler only speaks of "grave" cases. For cases of puerperal infection in the early stages, when it may be that the case is one of sapremia, which promptly recovers after clearing out of the uterine contents; for general blood or lymphatic infection and for uterine phlebitis Dr. Chandler surely would not resort to this measure and hope for success. If the infection is a virulent streptococcus and has passed beyond and is not confined to a localized area in the pelvis, as so frequently happens, surely this plan of treatment would not avail, as hysterectomy and the use of curettage have failed, as Pryor's operation has failed and as every other surgical operation has failed. Dr. Norris thinks Dr. Chandler should specifically state the class of cases in which he would consider this operation necessary; and he would be glad if he would furthermore point out to the obstetrician in what way these perforations of the uterus can accomplish drainage of that organ more efficiently than an intrauterine gauze drain. Dr. Norris is convinced that there are very rare cases of beginning peritoneal infection following abortion and labor, due to leakage from the tubes, that culde-sac drainage might save, if we could diagnose them by any means, clinical, bacteriological or otherwise. If the channels could readily determine through which the infection is spreading and how far it has spread, the obstetrician would know when and what cases to drain and attempt to avert a fatal termination. So far as his experience goes, that cannot be determined. He has gone over this ground in the discussion of Dr. Pryor's paper. Until Dr. Chandler designates more certainly in what class of cases he advocates the use of this methods, Dr. Norris thinks it is distinctly dangerous teaching. He speaks of it adding to Dr. Pryor's operation in that the uterus is also drained. The uterus can be drained as efficiently and certainly with less danger without making useless perforations through the uterus into the peritoneal cavity. Gauze passing from the cavity into the vagina will drain the uterus as well as three pieces of gauze that perforate the uterus and pass into the peritoneal cavity, without the serious danger attendant upon the latter. He cannot conceive why any one would perforate the uterus, expecting to secure better drainage of the uterus. He can see no advantage and only dangerous surgery in the operation, and he would like Dr. Chandler to convince the obstetrician that his

patients recovered because of and not despite his operation. Dr. Norris feels that he adds grave danger by carrying from an infected uterus a gauze drain into a peritoneal cavity that may be free from infection. His judgment is that it adds a distinct risk in the treatment of any case. He should feel quite as inclined to treat a case in this manner as he would, in a case of beginning sepsis, to open the abdomen and cul-de-sac and insert a loop of gauze with the hope of saving life. If it is drainage we are striving for, why stop with the uterus and cul-de-sac? We must remember that drainage is not going to save every case of sepsis. It is utter folly to attempt to drain the pelvis or even the uterine cavity if the infection has already spread beyond. It is risk enough to open the cul-de-sac, but this is doubled by perforating the infected uterine wall and inserting gauze into the peritoneal cavity. Dr. Pryor's operation is only done in cases of streptococcic infection. Its employment is based upon bacteriological study and he has limited his cases to that class. Dr. Chandler has not done so. He simply speaks of "grave infection." The mere finding of streptococci does not tell how virulent the case is. Dr. Norris has repeatedly found streptococci in the uterus after labor when the woman had no fever. He has also found them in women who had fever and who got well. The mere finding of organisms is not enough; the difficulty in selecting treatment depends wholly upon the question of diagnosis spoken of by Dr. Wilson. There are no means to predict the outcome in individual cases, no means more reliable than clinical to differentiate the gravity of our cases, and until that can be done, this method of relying wholly upon drainage and running the risk of infecting the peritoneal cavity should not go unchallenged. He considers it dangerous practice and believes that it would lead, in a large number of cases, to increased mortality. Relatively few cases would be saved by vaginal drainage, and these few would just happen to be appropriate cases operated upon at the right time. We have no accurate means of determining the appropriate cases early in the course of the disease and when that right time arrives. He thinks a word of caution should be sounded, and that the obstetrician should reserve pelvic and abdominal surgery for puerperal sepsis to cases with distinct localized lesions. To open the cul-de-sac or perforate the uterus and pack with gauze where no evidence of infection outside of the uterus exists, or when evidence does not exist that infection has spread to the lymphatics or venous systems, is the height of folly. The obstetrician should confine pelvic surgery in puerperal sepsis to localized infections. When no localized infection exists this method is unscientific. Even with the most skilful bacteriological examination we could not predict in any case whether it is a type of case that pelvic drainage will save. If Dr. Chandler operates upon a case when the infection has passed beyond the uterus and pelvic cavity, he helps the patient not one iota by opening the cul-de-sac, perforating the uterus and dragging three pieces of gauze from the opening in the vaginal vault, through the uterus and the cervix, making a U-shaped drain. If the infection is localized in the uterus the patient runs the risk of septic peritonitis, from which she may die, as the direct result of this treatment.

Dr. W. Reynolds Wilson, in the discussion, supplemented his remarks by stating his experience in hospital practice with cases of infection. He does not believe that one-half per cent. of the cases that begin as infected cases go on to septicemia, that is, to a fully developed systemic infection. The class of cases that it has been his experience to deal with have been: (1) Putrefactive cases, in which there is intoxication from retained débris within the uterus. That is the common class of cases which he has observed. (2) Cases of parametritis, a simple lymphangitis, with edema of the broad ligament. In this class the expectant treatment has always been satisfactory. (3) Cases of the gonorrheal infection. These are the common cases in his experience based upon a more or less extensive observation, and in every one of such cases, were such treatment resorted to, the chance of streptococcic infection of the peritoneum would be imminent.

Dr. B. C. Hirst, in the discussion, remarked that he would like to add a word of condemnation of this proposition of Dr. Chandler, which cannot be based on such practical experience, and which is, Dr. Hirst thinks, distinctly dangerous. Indeed, it is difficult to criticise it as severely as it deserves, and yet to observe the courtesy of debate. He should object to a proposition of this kind appearing as read before the Obstetrical Society, unless accompanied by the criticism which is sure to follow. Dr. Pryor's proposal to drain the pelvis, to which Dr. Norris has referred at length, is more rational than is Dr. Chandler's, but it is founded on incorrect premises, and is not, to Dr. Hirst's thinking, the result of sufficient clinical experience with all forms of puerperal sepsis, and is wrong in principle. Dr. Hirst said he performed a good many exploratory incisions, especially in the early history of the operative treatment for puerperal sepsis. When in doubt in a case of metritis, whether the inflammatory product is in the uterine wall and is about to break into the peritoneal cavity, or whether it is contained within and limited to the wall, he still resorts to an exploratory abdominal section, as he also does in cases of pelvic cellulitis, to be sure there is no intraperitoneal involvement. From a considerable experience, therefore, in the inspection of the pelvic cavity in cases of sepsis, he is in a position to say that Dr. Pryor's premises on which he bases his procedure for opening the vaginal vaults are incorrect. The pelvic peritoneum is not immediately invaded in streptococcic infection, and is usually never invaded at all. Dr. Hirst has seen a number of cases of the gravest infection in which there was no involvement of the pelvic or abdominal peritoneum. The pelvic peritoneum is often entirely unaffected, and there is no serum in the pelvic cavity. If, therefore, Dr. Pryor's procedure is incorrect, Dr. Chandler's, he thinks, is totally unwarranted. The former will occasionally be followed by fatal peritonitis, which could otherwise have been avoided; the latter, if ever actually tried in practice, would be even more likely to cause death in this way.

Dr. F. H. Maier, in the discussion, said he did not hear all of Dr. Chandler's paper, but from the remarks of Dr. Norris he has gleaned the principle of his procedure in this class of cases, and he agrees with Dr. Norris that it is not one to be allowed to go unchallenged. Concerning Dr. Pryor's operation, there is no question in his mind that in a certain class of cases it is a most valuable procedure. Dr. Maier is inclined to think that in a certain number of systemic infections the lower pelvic cavity acts as a breeding focus from which fresh poison is sent out into the system. By opening into Douglas's cul-de-sac the obstetrician undoubtedly corrects a condition that would otherwise cause the death of the patient. And these are the cases, until the profession has better means of satisfying itself that there is nothing in Douglas's cul-de-sac, in which it will be good practice to drain.

Dr. Norris asked Dr. Maier how he would recognize that class of cases.

Dr. Maier, in answer, said until the profession had better means of recognizing this class of cases in which infection in Douglas's cul-de-sac with systemic infection was had, and where it does not respond to expectant treatment, he thinks it is well to make such an incision. He thinks there is very little danger and much good can be accomplished. He remembers one case a year ago, in which the attending physician had cleaned the uterus a week before. The case was brought to the hospital, and he thought the attending practitioner had not done a clean job. On going into the uterus, however, there was nothing there. Then a vaginal incision was made, and an opening into Douglas's cul-de-sac, and a lot of dirty serum was found. No cultures were made to demonstrate the organisms. The patient recovered after a protracted convalescence. In certain cases where the profession intuitively feels that something must be done, he feels that the Douglas's cul-de-sac can be opened with little added danger. He thinks the risk is worth the doing.

Dr. B. C. Hirst, in the discussion, said he would like to ask these gentlemen, particularly Dr. Chandler, what proportion of cases they think are infected in Douglas's pouch. A large experience is needed to decide this question. He thought the president, and himself, who had charge of large maternities, and who saw scores of these cases to one that is seen by the general surgeon or the gynecologist, without experience in obstetrics, were in a position to make a statement on the subject. He has rarely seen infection in the puerperium confined to Douglas's pouch. He had to operate on a large number of these cases every year. He doubts if any clinic in America had a larger number than his. In the last three days three of the most desperate cases of puerperal sepsis were brought into the University Hospital in the ambulance. He has usually four to six such cases under observation continually. Out of a large number, every year, he sees a very small proportion in which the infection is localized in Douglas's pouch. When one can determine its localization in Douglas's pouch by easily appreciable physical signs, the obstetricians all agreed that colpotomy is indicated, but to do this operation as a routine measure, simply because one don't know what else to do, and feels that something must be done, is a proposal discreditable to surgery.

Dr. Chandler said, in closing the debate, one would naturally think after the remarks which have been made that there would be some hesitation on his part, but so convinced was he that the operation is a logical one, that the opposition expressed only caused him to uphold it more zealously than had such opposition not manifested itself. He answered the arguments in their turn as they have been propounded by the different physicians present. In regard to the criticism of Dr. Boyd, he would state that the text of his (Dr. Chandler's) paper contains the answer. It is that the operation is advised in severe cases, or cases that in one's judgment are liable to become severe, and the paper states that the operation would not be employed in cases of mild infection or infection with the colon bacilli or with the gonococcus. It is only in the streptococci cases that the operation is advised. In regard to the second point, Pryor has reported cases in which he has operated, and in which the temperature fell immediately, and the patient recovered, showing that there was no systemic infection, or that it was not of such character that it killed the patient. And his operation, which in Dr. Chandler's judgment lacks some of the better qualities of the one suggested here to-night, has produced good results, unless one says that Pryor did not tell the truth, and he (Dr. Chandler) is not prepared to make or even insinuate such a statement, and would refuse to believe a statement of that kind. Dr. Wilson spoke of cases of infection being very few, thereby intimating that the operation was for some obscure trouble, yet Dr. Hirst, in his discussion to-night, has stated that three cases have just entered the hospital with which he is connected. This, in Dr. Chandler's judgment, answers Dr. Wilson's question. While not altogether bearing on this point, and yet he feels it is apropos, he would like to say that there is a habit in discussing the cases in our city societies of citing only the cases which occur in the city, omitting any that occur in the country and suburban districts. What is applicable to the city in regard to the number of cases and their causes, etc., of disease, is not always applicable to those of the country, and vice versa. He would state, however, that he believes more of these cases occur in the country and in smaller towns than in the large cities. This is not in any way a reflection against the judgment and skill of the country practitioner. But he has such distances to travel and so many hardships with which to contend before reaching his patient, that in spite of his skill and judgment more cases do occur in his practice. Dr. Wilson spoke of the removal of the placenta in one of Dr. Chandler's cases. It is true, no one can say that the case would not have recovered with this simple removal, and it may be that the point is well taken. Dr. Norris has asked an important question: When do these cases need the operation? Dr. Chandler would answer that by asking whether Dr. Norris, or any other doctor, can always tell when a patient is ill from any trouble, when in the exact time, or what is the exact basis upon which to determine operating. Just as in Dr. Keen's paper on "Massage of the Heart," when he (Dr. Chandler) asked him how long he would wait before performing massage of the heart, he said that it was not time that was to be considered, but after a certain lapse of time, probably five or ten minutes, but he would not be held to that, as it was the general condition of the patient and other matters which would determine whether he would perform massage of the heart. With all things given, with the respiration over 44, and with an infection streptococcic in character, Dr. Chandler would not hesitate to do this operation, bearing in mind the general condition of the patient in this advice. The reason he spoke of respiration is because he believes this is a valuable indicator in this as well as in other troubles. A case was just brought into one of the hospitals, and after being there some little time was seemingly recovering, and on the day before the patient died the temperature had fallen to 98.2° from 104° F.; the pulse was almost normal; everything except the rapid respiration, which was between 50 and 60, pointed to recovery, and yet within a few hours the patient was dead. Dr. Norris also asked how this operation would give additional drainage, and why the operation was more logical than that of Dr. Pryor's, which seemed to him to be the more logical of the two. In the first place, the operation of Dr. Pryor's is not an operation of drainage, and he (Dr. Chandler) could not conceive that it does drain to any extent. On the other hand, if one considers the lymphatic system around the uterus, consisting of a jacket of lymphatics leading to two different trunks or cords which lead from the region of the cervix out through the broad ligaments, and nearer the fundus of the uterus, those forming a complete network of lymphatics surrounding these parts and leading from these parts to the general lymphatic circulation, he thinks the logic of how additional drainage is obtained is evident. The moment that one punctures clear through the uterus one punctures these channels, thus making open-

ing through which free drainage can occur. The operation is surely much more practical on account of this drainage than that of hysterectomy, which has been done with a mortality of 55 per cent. in selected cases. Dr. Norris also spoke of immediate spreading of infection. Dr. Chandler thinks this is one of the best arguments for the operation, for if it did not spread through all the lymphatics immediately, one probably would not be justified in performing the operation, because one might be the means of spreading such infection by injuring the uterus and its tissues, but since it is already infected that argument loses its force. Jacoby has reported 51 cases which were selected, every one of which showed infection of the lymphatics. Dr. Norris asks what Dr. Chandler means by "extremely severe cases." This is a point well taken. He (Dr. Chandler) cannot answer this otherwise than he has, except by saying, generally speaking, when a case had reached the danger line. There are some cases overwhelmed by infection in which one cannot tell the result. The profession has seen them go to the danger line and then recover. It may be that the lymphatics here may be more numerous than the lymphatics in other local parts, still one does not have any more general systemic infection following this operation than one has when entering other parts for operation, when such parts have been infected. Dr. Chandler remembers Dr. McLane Tiffany, of Baltimore, speaking before a meeting of railway surgeons several years ago, make the statement that the only way to cure a macerated kidney, or to save a patient, was to boldly cut into the kidney. Dr. Chandler thinks there is not a man in the country who would hesitate to do this now, nor would he admit that he would have more infection than if he did not so cut into the kidney, and in that case, as in these cases of sepsis, he probably would have death if he did not do so. In regard to bringing forth a warning, no one desires to protect the medical fraternity and the patients more than Dr. Chandler, but in these severe streptococcic infections, with a respiration over 44, and with every sign of collapse, with the full knowledge that every lymphatic in that part is infected, and he defies anyone to bring a case here that differs from those reported by Jacoby, he cannot see why any cry of warning is needed. On the other hand, he can see why it is wrong to stand by with a full knowledge of the case, and say one cannot operate, because one may make further infection, and this when the infection is upheld by every analysis and all the statistics that the profession has at its hands.

In regard to Dr. Hirst's remarks, his speech of condemnation is one only of condemnation to my mind, and not one of logic. He demonstrates in his text-book that in these conditions the uterus is a generally infected organ, and in this text-book he displays a uterus which he has removed in hysterectomy—the uterus seared from top to bottom. Both the picture and his description of the uterus leave their impression upon the mind, and Dr. Chandler would ask him how in the name of common sense is one going to reinfect an organ of that kind, and how much more logical is the operation which he has proposed than the one which he and others at one time advocated, that of hysterectomy, for in hysterectomy, in tying the uterus one ties up the lymphatic trunks or cords, thus tying up the lymphatics which have been infected so that the poison absolutely cannot get out, tying them up in a bag, as it were, with the result that the only exit that they have is in the general current, and, if possible, the result of a stronger and, therefore, a more virulent general infection. The mortality in hysterectomy, as has been mentioned before, in selected cases, is admittedly 55 per cent.

Dr. Chandler thinks too serious a view of this operation is taken. He believes that when it is realized that the uterus is a thoroughly infected organ, it is too serious a view and one not based on mature judgment and thought to speak of sending out warnings, and not desiring that this society should bear the burden of any such operation, as the gentleman has remarked. In answer to Dr. Hirst, Dr. Chandler thinks the operation he suggests is a logical one, because it does drain, and that is the endeavor to be accomplished, and he has tried to the best of his ability to demonstrate how it does cause such drainage. He will again call to the minds of the obstetrician the position of the lymphatics as they leave the cervix and uterus, and as they surround the uterus, and ask if there is any other method to drain, and is there anything more logical than to drain an infected organ. Again, if the organ has been generally infected, and that much be admitted, what can be the objection to letting out as much of that infected material and its poisons as is possible? In regard to Dr. Pryor's operation, Dr. Chandler does not think Pryor drains his cases. As to the proportion of infection in Douglas's cul-de-sac, it makes no vital difference whether the infection becomes located there or not. It is primarily in the uterus and lymphatics, and in mild cases it may not reach the posterior part of the uterus at all. In severe cases it may not cause an inflammation in Douglas's cul-de-sac, but in other severe cases it does. Patients do not die from infection of the cul-de-sac. If so, one-half of the patients with infected tumors of the uterus and surrounding parts would never reach the operator, because they would have died long before. It is the absorption through the lymphatics and veins that does the damage in these cases. In Dr. Chandler's judgment it is not a vital objection against the operation simply because one cannot tell or give the exact symptomatology when one operates. One might say in any case when to operate, but it depends absolutely upon other conditions present. That is exactly so in this case. In mild cases, with the temperature of 102° or even 103° F., with a respiration of 30, and with no seeming general systemic infection, he would not advise operating, but when a general infection is evident, because mortality in these cases, in spite of what has been said, is high, he sees no reason why one should stand idly by and allow patients to die—and with the results which he has so far obtained, with no logical arguments against the operation, he shall certainly proceed to operate, and will feel no fear of further infection while thus draining the lymphatic system by puncturing an already infected organ.

Tubal Menstruation. Internal Hemorrhage from Ectopic Gestation Without Rupture of the Sac.—The author of this paper is Dr. E. E. Montgomery, and it was read by Dr. P. Brooke Bland. The author reports the history of this case in order to strengthen the argument contained in his paper presented before this society at the October meeting, 1903, on "The Structures Taking Part in Menstruation." At this meeting a case of tubal menstruation was also reported by Dr. Bland. These two papers were written in collaboration. The history of the present case is as follows: The patient was operated upon for laceration of the cervix and a retrodisplacement of the uterus through the abdominal route. The day before the operation the patient's menstrual flow began, and in view of this fact, the author, therefore, carefully examined the Fallopian tubes to determine whether they actually took part in the menstrual process. His finding seemed to indicate that they do really participate in menstruation. In this case the tubes were darkened and congested. Pressure ex-

erted from the uterine toward the abdominal end of the tubes caused a few drops of blood to appear at their external orifices, and also small dark-colored clots were expressed. These were somewhat of the character found in menstruation. The author regrets that a microscopical examination of these clots was not made, because of the possibility of their having been associated with an ovum, and he also regrets that he did not examine the ovaries for indication of recent rupture of Graafian follicles. The case is presented, as heretofore stated, as additional evidence that the tubes are active in the physiological process of menstruation.

In this contribution the author desires to point out the constant danger of tubal pregnancy, in that serious hemorrhage may take place from the gestation sac without fracture of its walls. The first class of cases in which serious hemorrhage may occur without rupture is tubal abortion. Such a condition is usually followed by profuse and dangerous bleeding. The cavity is generally filled with blood which clots, and finally arrests the hemorrhage. Occasionally the separation of the fetal sac may not be complete, but hemorrhage occurs from the partial separation which makes its exit from the abdominal end and causes extensive hemorrhage. Finally, the weakened circulation will result in the formation of a clot which arrests the hemorrhage and saves the patient. The writer cites a case of tubal abortion. The patient had a characteristic menstrual history of pregnancy. She missed two periods, and upon coming under observation had been bleeding for several days. This bleeding was attended with severe pain in the lower abdomen. The patient at times had attacks of cerebral circulatory disturbance. Examination revealed a resistant mass to the right of the uterus. Diagnosis of ectopic gestation had been made, though the author from the appearance of the patient did not think the shock sufficient to indicate either rupture or tubal abortion. The patient was operated upon, and on entering the abdomen, the right tube presented a sac occupying the outer half of the tube, which was filled with clot, but showed no rupture. The fluid had escaped from the end of the tube, but an abortion had not really taken place. The other class of cases to which the author calls attention are those in which the villi of the chorion erode and penetrate the tubal wall, and even its serous covering, and thus bleed from the extremities into the peritoneal cavity. These projections are so small as to often only be perceptible by the microscope, but yet cause dangerous hemorrhage. He cites a case in which this condition was well exemplified. The patient was admitted to the hospital, quite anemic looking, complained of soreness over the abdomen, but had no marked tenderness or rigidity. Examination revealed a retroverted uterus, but little else could be determined. Blood examination showed red blood corpuscles 3,200,000, white 720,000, hemoglobin 70 per cent. Her temperature ran from 99° to 100°F.; pulse 96 to 104. This patient had passed one period but a few days when she was seized with severe pain in the lower abdomen, which was followed by bloody vaginal discharge. This had continued until her admission to the hospital a month later. The patient would at times have rather severe attacks of pain in the lower abdomen, particularly when moving about. At times she also became exceedingly faint and was obliged to remain in bed. She was operated upon, and upon entering the abdomen it was found filled with fluid and clotted blood. The right tube was occupied with a sac about the size of a small orange, which ruptured on being delivered, allowing the amniotic fluid to escape, and not blood. Examination of the sac did not reveal any seat of rupture, except that caused on delivery, but on its surface several small, dark-colored hemorrhagic areas were noted. These upon opening the sac were found to be immediately over the cord or at the placental site. Microscopical investigations revealed that these dark-colored areas were the seat of hemorrhage, and were caused by the villi eroding and penetrating the tubal wall.

(To be Continued.)

BOOK REVIEWS.

The American Year-Book of Medicine and Surgery Edited by Geo. M. Gould, M.D. Volume 2, Surgery. W. B. Saunders & Company, Philadelphia, New York, and London.

This book forms a quite complete record of what has been done in general surgery during the past year. The plan of having specialists in charge of departments has been continued, and but few changes have been made in the editorial staff. Among the new names are those of Drs. Griffith and Gittings, in pediatrics; Drs. Pyle and Brown in ophthalmology, and Drs. Marshall and Rhein in legal medicine. A special endeavor has been made this year, which will be continued in the future, to place at the head of each chapter a summary of the more noteworthy advances and discoveries made during the year. These should prove of use to the reader in fixing the attention on the special trends of progress in such a vast mass of literature as appears each year in every branch of medical science. The book is well printed, illustrated and indexed, and contains the following departments. General surgery, by Da Costa and Gibbon; obstetrics, by Hirst and Dorland; gynecology, by Baldy and Dorland; orthopedic surgery, by Gibney and Watermann; ophthalmology, by Pyle and Brown; diseases of the nose, throat and ear, by Kyle and Fetterolf; anatomy, by Hamann. In each of these chapters, all important American and foreign contributions are completely abstracted and give to the Year-Book the character of an excellent work of reference of what has been published during the past twelve months.

Bericht über 137 Gallensteinlaparotomien aus dem letzten Jahre, etc. By Prof. Hans Kehr. J. F. Lehmann, München.

During the past year, Kehr examined 300 patients afflicted with gall-stones, among which he operated upon 137. The latter are reported in the above work, which also contains a résumé of the non-operative cases. Kehr prefers the oxygen-chloroform anesthesia, insists on the strictest asepsis and always washes out the stomach before operation. His total mortality was 16.5 per cent., this including the cases where other operations were also done. Among 68 straight gall-stone cases, the mortality was only 3 per cent. Kehr believes that every case of gall-stones should be operated upon, as a cure results in 97 per cent. of the cases, whereas medical treatment is followed by cure in only 72 per cent. As a matter of fact, however, he only recommends operation when the history or the physical examination points to an empyema, a hydrops, or a chronic closure of the ducts. Otherwise he is guided by the frequency and severity of the colicky attacks, and also by the social status of the patient. In about two-thirds of the cases which consult him, he does not operate. Kehr does not believe that any spontaneous cures result from medical treatment alone.

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ORIGINAL ARTICLES.

COMPARATIVE PROGRESS OF MEDICINE AND LAW.[1]

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HALF a century of study and practice in my profession should have given me some knowledge of the progress of the law and rendered me in a measure capable of indicating its growth. In this branch of my remarks I may hope to interest you in what very naturally is new ground to you. When I come to speak of the advance in therapeutics, I am conscious that I shall be addressing those who know intimately what I know only superficially, and here I shall claim your tolerant indulgence. Yet the thoughts and observation of the laity to either profession ought never to be without interest and benefit to the other. It is not my purpose to decide which profession has made greater progress, but rather to set the facts before you and leave the matter to your own decision.

It would be very difficult to assert the comparative ages of the two professions. Each stretches back to the time when history began to be written. But the law has at once the advantage and the disadvantage of an inspired record. The Decalogue, announced amid the thunders of Mount Sinai has maintained its authority in all succeeding ages. The Sermon on the Mount and the other sayings of Christ were distinct progress in law, introducing more elastic rules of human conduct. But it will be seen that the Decalogue and the Sermon set a hard and high standard of law, and it is difficult to better them or to do little else than apply them to our modern life. Yet no branch of science is perfect when it has become stationary and has ceased to adapt itself to the changing conditions of humanity. Law being the statement of the relations of man to man, and of man to the State, must be judged as to its progress by the progress of humanity.

It may perhaps be said that there was never a more complete digest of law than the famous Pandects of Justinian. It will interest you to know that they were published A.D. 533, in fifty volumes, embracing all departments of law. They were the work of a body of the most learned lawyers and publicists of that age, convened by the Emperor Justinian, and consequently bear his name. While adequate to that day and still authoritative upon many subjects, many of their doctrines have become inapplicable and obsolete by the march of civilization.

To illustrate: Compare the hundred-ton shallops in which Columbus made his voyage of discovery, or the Mayflower of 180 tons burden with the modern trans-Atlantic liner of 20,000 tons. It is easily seen that the law applicable to these little vessels becomes inadequate to the requirements of the greater. Remember that it was only in 1806 that Fulton sent his first steamboat up the Hudson River and only in 1819 that the first steamship crossed the Atlantic. It is amusing to remember that in heavy storms the paddle wheels were folded in upon the deck.

Again, at the time of the American revolution the entire passenger and express business between New York and Boston was transacted by two stages and eleven horses. The first railroad locomotive in America was used in 1829. Now the transportation companies own one-seventh of the entire real and personal property in the United States.

Telegraphy was only invented by Prof. Morse in 1846. It was followed by telephony and wireless telegraphy. These instruments and methods, and the introduction of machinery in manufactures and transportation, with the resulting danger to the life and safety of the individual have changed commercial conditions, and required either entirely new rules of law, or the extension and application of old rules to the new conditions, and it is chiefly along these lines that progress has been made in the legal profession.

But even here it may be said that it is not in legal principles but in their application that the real progress of the law becomes apparent. And here the improvement in the character of courts and judges and lawyers becomes significant. It is only necessary to contrast the infamous Lord Jeffreys, murdering men under judicial forms at the order of King James, or Lord Chancellor Bacon accepting bribes at the hands of suitors and justifying the practice on the claim that it had not influenced his judgment, with such modern judges as Mansfield, Marshall, Jay, Kent and Story.

The lawyer is shackled by precedent. You may appreciate the difficulty of precedent when I tell you of the avalanche of law books which has descended upon the profession. It is computed that over 300,000 decisions are made annually in the United States, 20,000 being decisions by Appellate tribunals. Many of these decisions are inconsistent because announced in different States with differing laws. I am informed by the librarian of our law library that in a single year he purchased nearly 650 new law books, including 150 text-books and 420 reports and 77 digests of these reports, a mass of legal literature under which reason staggers. It is well-nigh impos-

1 Read before the Kings County Medical Society.

sible to keep abreast of the decisions of courts and the enactments of legislatures. Yet in these decisions the trial lawyer seeks authority for the management of his case and all results in endless litigation. Three centuries ago Bacon, Lord Chancellor of England, recommended to King James the codification of the law of England because there were 60 volumes of law reports. One digest of decisions recently published contains twice the matter of all these 60 reports!

By reason of this confusion, the State has been compelled to resort to statutory enactments, and nearly all advance has been made by that method.

History is saddened by the record of the merciless condemnation and execution of men and women for religious convictions, and this sometimes by legal authority; at other times by self-constituted church tribunals like the Spanish Inquisition, or the decrees of conquering invaders of ancient peoples. These things no longer exist.

Witchcraft was punished with death in the eighteenth century on both sides of the Atlantic, and punishment for this "crime" was only abolished in the reign of George II.

As early as the beginning of the last century in England over a hundred crimes like forgery, counterfeiting, theft, and so forth, were punishable with death. These things form a lurid background against which to paint the foreground of advance. Now, in this State, only treason and murder are punishable with death.

Included in the progress of the law is the treatment of prisoners, both in war and in peace. The moral sense is shocked by the brutality of Christian authorities to men and women, not only for crimes, but previous to the time of John Howard, for debt. It is a distinct advance that imprisonment for debt is altogether abolished. Criminals now receive merciful and reformatory treatment. Prisons are no longer pest-houses, from whose horrors death is a kindly release.

In early times persons on trial for crimes were not allowed the assistance of counsel in their defence, although the prosecution was conducted by the most learned lawyers of the day. Consider the condition of an innocent and perhaps an ignorant man, confronted with the best legal ability and the whole power of the government, and compelled to conduct his own defence. The right to employ counsel has doubtless saved many an innocent man from judicial murder.

The nineteenth century will ever be memorable in human history by reason of the abolition of serfdom in Russia, and of slavery in the United States. The former was the fruit of peace, the latter of war, but in both cases, law and justice triumphed over the wrongs of centuries.

Comparison of the legal standing of the woman of to-day with that of the woman of the middle ages speaks volumes for progress. In early times she was a serf, a chattel, a painted doll for the amusement of her lord and master. At marriage all her property passed to her husband. Now she stands by his side, his equal in legal rights, is the owner and controller of her own property, with capacity to dispose of it and to make contracts just the same as if she were unmarried.

Perhaps no greater progress has occurred than the institution of trial by jury, now so dear to the Anglo-Saxon heart. I can find no trace of this method of trial in the more ancient laws, but it was coeval with the first civil government of England and was in use in the earliest Saxon colonies, having been ascribed to the mythical Odin or Woden. It was also mentioned in the laws of King Ethelred in the eleventh century. Its use was temporarily shaken by the introduction of the Norman trial by battle, but survived that method in its general scope. Its preservation was one of the main objects of the Magna Charta, which in 1215 was wrested from King John by the English barons in arms.

It is fair to say that there have been some judicial criticisms of trial by jury, but the general consensus of opinion is that it is a distinct advance upon ancient methods.

The trial by battle was introduced into England by William the Conqueror, and it is a curious fact that such a judiciary duel was fought as late as 1638. The trial by battle was waged by champions, and not by parties to the action, because if either of the parties had been killed the action would have abated by the death—in some cases a most desirable end of unseemly controversies. Each champion made oath that he was thoroughly persuaded of the justice of his course and added: "Hear this, ye justices, that I have this day neither ate, drunk, nor have upon me neither bone, stone nor grass, nor any enchantment, sorcery or witchcraft, whereby the law of God may be abased or the law of the devil exalted, so help me God and His saints." The battle thus begun, the combatants were bound to fight, if necessary, till the stars appeared in the evening.

Corporations are of comparatively recent creation. They grew out of the principle that investments on a scale adequate to large enterprises ought to be possible in such a way that men might put at use definite portions of their property without the risk of losing all. In my opinion, it was patterned upon the ancient maritime law as to ownership in vessels, by which an owner's loss, in case of collision or other disaster, was limited to his interest in the ship.

Out of corporations have grown the momentous operations commonly known as trusts. They are still in their infancy, but new enactments are guarding against the evils which at the present time seem to threaten the interests of the commercial world.

Another evidence of progress may be found in international law. For many centuries that law has been unwritten, that is, not statutory. Like our common law it was not wholly written, but was embodied in diplomatic and judicial decisions. In the last and the present century there have been international congresses to settle matters of this nature like the International Marine Conference of 1889, upon matters relative to

navigation, the Treaty of Paris in 1856, by which, among other things, privateering (a legalized species of piracy) in time of war was abolished, and the rights of neutrals defined. The reports of these conferences were subsequently adopted by legislative action of the Great Powers, and thus made permanent statutory international law.

The Geneva Conference upon questions arising from the depredations upon our commerce of the Confederate steamers built in England during the Civil War undoubtedly prevented war between the United States and England. All mark positive advance upon ancient methods and laws, and will hereafter in large measure prevent war.

But the most notable of all advances in the law is the Constitution of the United States. Gladstone pronounced it to be "the most wonderful work ever struck off at a given time by the brain and purpose of man." John Fiske calls it "The Iliad, the Parthenon, or Fifth Symphony of Beethoven."

Under its power liberty and a great nation have become possible, permanent and inseparable. Freedom in thought, in action, in choice of rulers, in worship, so sharply contrast with feudalism and monarchy and oppression, that men of all nations are flocking to our shores to become part and parcel of the grandest nation of the ages, a nation which, in the first century of its existence has increased its population from five to seventy-five millions, and extended its territory from a narrow fringe on the Atlantic, until it has crossed the continent, and from its western shore looks across the Pacific to the land where civilization had its birth.

It is not wonderful that looking upon this marvelous growth, so conservative and English a statesman as Lord Rosebery has predicted "the sublime transference of political power and the seat of empire from the Eastern to the Western hemisphere."

I have thus in a cursory manner indicated the salient features of progress in law. Is it too much to say that the law has lifted the world to a higher plane of civil and religious liberty and has increased the sanctity of human life and happiness, and that under its benign influence the world grows better with every passing year?

Coming now to consider the advances in medicine, I am somewhat amazed at my audacity in speaking to you upon that subject. I do this with hesitation and only for the purpose of opening the discussion by yourselves. Let me premise by saying that upon this branch of my subject I am much indebted to my friend, Dr. John C. Minor, and to a study of the admirable review of Dr. William Osler, published in 1901.

While I have spoken of the great antiquity of the law, I have not lost sight of the equal antiquity of medicine. Æsculapius, reputed son of Apollo, seems to have been the mythical demigod of your science. His school in surgery has been immortalized by Homer in his Iliad, and he has been for ages regarded, not altogether without reason, as the founder of the science of medicine. Notwithstanding the fables interwoven with his history and detracting from its credibility, we can collect enough from it to be fully persuaded that his talents must have been of the very highest order, and that his knowledge must have appeared supernatural in the days of darkness and superstition in which he lived. On his death, he was elevated by his contemporaries to the dignity of a god, and temples were erected to his memory in various places, in which he was worshipped with divine honors. These temples of Æsculapius were the first medical colleges in existence. As schools of medicine, they differed in their measure of fame, in the nature of their doctrines, and in the method of their practice. It is related that he treated mental disorders with music, certainly a method not fraught with the danger of poisonous drugs. He had two sons, one of whom practised surgery and the other medicine in its general sense, and the division of the profession into surgeons and physicians apparently originated with them.

Hippocrates lived in the fifth century before Christ, and was possibly the most advanced physician of his and previous ages. It is hardly worth while to enter into the various doctrines that prevailed in the medical profession prior to his time. They were largely fanciful and childish and, as medical teaching was in a great measure absorbed by the priests of the temples, it became naturally a sort of medical philosophy in which the hallucinations of the imagination were allowed to usurp the place of observation, and the most puerile theories to supersede the cautious deductions of reason and experiment.

With the exception of Pythagoras, who was born in Samos about 600 B.C., there were none who contributed notably to the advance in medical knowledge until Hippocrates began a life devoted to studies in medicine that has made his name venerated for more than twenty centuries, and whose authority commands respect, even at the present day. Any one who studies his writings is astonished at the extent of his observation. The chief feature of his teaching was that disease is just as much a process governed by natural laws as life itself, that the process could be known by observation of symptoms which indicated the spontaneous and normal direction of recovery. Added to this was a careful attention to diet adapted to each kind of disease. He regarded medicines as of minor importance, although he mentions over 250 different drugs. His grand object was to purge medicine from the false doctrines which disgraced it, and to establish its fundamental principles on a solid and rational basis. He was a strenuous opponent of the dangerous doctrine, inculcated by the priests in almost every age, of the celestial origin of disease. He exposed the imposture of those who, masking their ignorance under the veil of piety, pretended to subdue, by charms and incantations, those complaints which they had not the skill to

encounter with the weapons of art. He taught that actual experiment, patient investigation and careful deduction were the foundations of medical science. He recognized the importance of nature in the cure of disease. He was the first to observe and describe accurately the minute circumstances of disease, the first to realize the importance of dietetics in its prevention and cure, the first to establish clear methods of diagnosis and prognosis; in a word, he was the first great clinical teacher, and for all time will be regarded as the father of rational medicine.

After the time of Hippocrates, medical progress seemed to suffer a relapse into the old ways of superstition. Much that he had taught was either forgotten or so perverted by erroneous doctrine that when Galen flourished it was full time for another revival in medicine. He lived in the second century A.D. and seems to have furnished the standard by which we may judge of progress in therapeutics. His reputation is founded not so much on original investigation as on his revivification of the doctrines and practices of Hippocrates, yet he was an acute observer, and left the impress of his genius and industry on nearly every department of medicine. He paid general attention to anatomical and physiological research and practised dissection of animals, dissection of the human body being forbidden by the religious sentiment of the age and practically illegal. His theory was that drugs contained the same elementary qualities as the body, heat, cold, moisture, dryness, etc., and that on the principle of curing by contraries, the proper drug was indicated.

It is not my intention to follow the history of medicine through the middle ages. The examples I haven given merely go to show that in ancient times about once in 500 years a medical genius was born into the world, who had something to say worth listening to and something to do worth copying. In the sixteenth century Ambrose Paré in France made his mark in surgical practice by ligating blood vessels and by improved methods of treating gunshot wounds. During that century anatomy and physiology were advanced by the studies of Servetus, Vesalius, Fallopius and Eustachius. Harvey also made his notable discovery of the circulation of the blood. The century was, in fact, the most remarkable one in the development of the more scientific departments of medicine.

I make no apology for passing over the times of Sydenham, Boorhaave, Haller, Cheyne, Huxham, Currie, Rush, Cullen and the early part of the eighteenth century, and the practice of inoculation by Jenner.

It was not, however, until the nineteenth century that the great problems of anatomy and pathology aroused scientific investigation. Bichat in 1801 placed the seat of diseases, not in the organs, but in the tissues of which they were composed. This, associated with Lainnec's art of auscultation and Avenbrugger's method of percussion, and Bright's researches on kidney diseases, resulted in differentiation of the fevers, in experimental investigations to determine the functions of the organs in health, in researches as to digestion, assimilation, circulation, respiration and excretion, with specialist investigations of all the organs, until science seemed to have explored every portion of the body. The result of these investigations was simply the building of a plane from which new efforts have been made and new results attained in every branch of therapeutics.

Dr. Osler says in his article, "Sanitary science, hygiene or preventive medicine may claim to be one of the brightest spots in the history of the nineteenth century. It is concerned with the causes of diseases quite as much as with the conditions under which these diseases prevail." Here bacteriology, as used by Pasteur, Koch, Cohn and others, was of incalculable help. Bacteria have been demonstrated to exist in rabies, fevers, leprosy, cholera, tuberculosis, pneumonia, la grippe, diphtheria, malaria, tetanus and many other diseases, and the prevalent method for preventing these diseases has come into general use.

It is well known that to a certain extent the blood and tissue cells have the power of killing germs, and this is called "general resistance." The problem has been to afford the system additional force in destroying the toxins and preventing disease where the system has partially or wholly lost its normal power of resistance to the attack of the microbes, and here the new healing art of serumtherapy finds its province in the use of antitoxins.

We come now to a period in medical science when not so much is heard of the individuals whose work advances the profession, but whose results are known to all. In old times, when a physician made a notable discovery, which was a distinct advance in medical science, his name became famous and public honors were accorded him, and all the while the vast majority of the profession remained in ignorance of the new facts and plodded along in the same old routine of practice. But to-day, when a new experiment is crowned with success or an original investigation brings a new thing in medical science to light, the whole profession is alert to seize and utilize the knowledge, while the one who has made the discovery is probably unknown to those outside of the profession. It is because I am outside of your profession that I am unable to recall the names of those who have done so much to advance the science of medicine within the last half century, but it is within my recollection that during that time the lancet has been folded up and laid on the shelf, fresh air and water have been let into the rooms of patients with fever, and the clinical thermometer and other instruments of precision have been introduced into practice.

During this period bacteriology has become known and by its application a flood of light has been thrown on the origin of disease. The study of these minute organisms has made surgery a new science and given to medicine some of its

most marvelous remedies. The use of antiseptics in surgery as a method of preventing inflammatory complications and germ contaminations belongs to that department of medicine that deals with the prevention of disease, and which in its larger sense is termed hygiene.

Doubtless the attention paid by the profession to anatomy has been the basis and reason of progress in surgery. Added to this is the discovery of anesthetics and antiseptics, by means of which surgical operations which startle the laity have become commonplace to the surgeon. The Roentgen rays, anesthetics and antiseptics have made miracles possible. A recent incident astonished the lay world. I refer to the treatment of a patient who had collapsed under an anesthetic. The attending physician quickly opened his thorax and taking the heart in his hand gently massaged it, so as to imitate its normal action and the patient's life was saved.

It may be deemed heretical in this body to say it, but it seems to us of the laity that Hahnemann rendered distinct service to medical science, not so much by his theory of *similia similibus curantur,* which was diametrically opposed to the theory of Hippocrates and Galen, as by inducing the use of smaller doses of medicine. A curious experiment was tried in the Massachusetts General Hospital in Boston. The story is told by Dr. Bellows, an allopathic physician. Three wards, exactly similar in all respects, were assigned, one to the allopathists, one to the homeopathists, and one to the eclectics. Patients (not surgical), as they came into the hospital, were assigned in strict numerical order to each ward. The result at the end of the year was that the percentage of deaths in the allopathic ward was six per cent., in the homeopathic ward four per cent., and in the eclectic ward, two per cent.

As in this connection, I may say that much has been learned from that true homeopathic physician, Doctor Mosquito, who alone of physicians, continually carries his scalpel-probe on that part of his anatomy where it is calculated to be most effective. His professional brethren have been swift to apply the knowledge of his practice in the treatment of their own patients.

Another advance is the absolute change from the old irresponsible certification of physicians to their regulation, not only by education, in the great medical colleges and the issuing of diplomas, but by the positive prohibition of the State against the practice of medicine, except by educated persons holding such degrees. The severer the tests and examination, the better for the public health and for the medical profession.

Positive progress has also been made, not only in the treatment of the insane, but in the study of the causes of insanity and idiocy. This has extended to all civilized nations, and these unfortunates are no longer regarded as unworthy of care and study.

The trained nurse is a most remarkable evidence of medical progress. We need only to compare Betsy Prig and Sairy Gamp abusing poor old Chuffey in "Martin Chuzzlewit" with the educated, informed, neat-handed, watchful young women, who make sickness comparative luxury, and to remember that symptoms and conditions are watched and reported to the physician with a faithfulness born of enthusiastic devotion to what ought to rank as a learned profession. I am always proud to remember that the first State school for the education of nurses was established in the Brooklyn Maternity, for which I drew the incorporation papers, and in which my wife was a faithful worker for many years.

In dietary matters, however, there seems to me to have been a decided lack of observation. I do not mean diet to the sick, for that receives the utmost attention—I mean attention to previous diet. I can hardly recall an instance, in my own experience, where my physician inquired of me what my previous general course of diet had been in order to acquire diagnostic knowledge of my condition and its cause.

We have learned so much, during the past fifty years, of the avoidable causes of disease that it gives rise to some natural queries. For instance, malaria and possibly yellow fever is known to arise from an infection carried by the mosquito; mosquitoes are killed by drainage or by covering the surface of their breeding places with a film of petroleum. Query, why should not the mosquito be utterly abolished and wiped off the face of the earth by a scientific application of the means at our disposal?

Again, the tubercle bacillus is recognized as the probable cause of true tuberculosis. This bacillus lives and germinates in living animal matter only. If every tuberculosis animal is either isolated or killed, why should not consumption be afterward unknown on earth?

Typhoid fever ought to be a preventable disease, requiring a proper sewage disposal that will destroy all germs, so that there would be no possibility of contamination of drinking water or food products. Would not systematic control of sewerage systems by government abolish typhoid fever?

Is it fair to compare the progress of our professions by results? Yes, in a measure, for we practice upon the knowledge at our command. The Bible declares, "By their fruits ye shall know them." The fruits of a lawyer's services to his client are gathered or lost at the end of the lawsuit. The result is concrete and apparent. But we must start with the fact that in all cases one of the opposing lawyers always loses. Hence each lawyer theoretically loses half of his cases.

Here I admit your great advantage. Your single adversary is the Grim Reaper. What is your proportion of successful contests with him? We lawyers may not hide our mistakes under any Hippocratic oath. Far be it from your servant to suggest that *you* ever make mistakes!

A lawyer and a doctor were riding past a gallows bearing its ghastly fruit in chains. The doctor said, "There hangs the victim of your legal mistakes." Presently they passed a

cemetery and the lawyer said, "There lie the victims of your medical mistakes." In both cases, however, dead men told no tales.

But we have this advantage: We advise and act upon the facts as related to us by our client. You can only diagnose, necessarily with difficulty, because partially, upon symptoms described by a sick patient's fancies. You may not see inside the body except by the imperfect X-rays. The wonder is that you accomplish so much as you do.

Sometimes, especially when I have lost an important lawsuit, I have doubted whether lawyers, except in rare instances, are of benefit to the world. But there never was doubt as to the physician. We envy you the power of ministering to humanity, of ameliorating suffering, of saving the dear lives of men and women and little children. Verily the good physician is God's vicegerent on earth.

HIGH-FREQUENCY CURRENTS; THEIR PHYSIOLOGICAL ACTION AND METHODS OF APPLICATION.[1]

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For many years, thanks to the researches of D'Arsonval, Oudin, Doumer, and others, high frequency currents have been employed in Europe in electrotherapy. The field of their application has constantly widened, but it is only within a very short time that their value has been recognized in this country.

The question is very frequently asked, what are high-frequency currents, and it may be said that they are the extremely rapid isochronous oscillations which are obtained when a condenser charged to a high potential is discharged into a conductor having a certain self-induction and feeble resistance. They are in reality currents of high potential as well as high frequency. High frequency enables us to obtain extremely high tension, the latter being necessary for the experiments investing high frequency properties in light. The theories as to the nature of light have been modified in late years, and the resulting experiments have founded the electromagnetic theory; the identification of electric and light phenomena. According to these theories, the phenomena are due to a periodic movement of the ether. The two phenomena present striking analogies, and one is obliged to admit that electric and light vibration differ only in frequency and wave length.

From a physical standpoint, high frequency currents are distinguished by three properties which are due to the great frequency and the high tension put in action. These are as follows:

First.—Very intense phenomena of induction. The electromotive force induced in a conductor by a neighboring conductor is in proportion to the product of the current by the frequency. Therefore, the electromotive force induced either by the self or mutual induction in a single spire is very great, and in a large solenoid will by the mutual induction light an eight-volt one ampere lamp. Auto-conduction is an application of this principle, one utilizing in this case the currents induced in the circuit formed by the mass in the human body, or certain parts more conductive.

Second.—Since the least capacity enters into play, high frequency currents circulate as well in open as closed circuits, so that contact with a single pole suffices to furnish the current. However feeble the capacity may be, the charge and discharge is repeated hundreds of thousands of times per second under a high tension, and it is this which explains the unipolar currents and the sparks which are obtained when a single spire of the solenoid is touched. In this case the body constitutes an insulated circuit which, at each oscillation, is charged with an almost constant quantity, since it is at a certain distance from the solenoid. The opposite charge must be found on the poles of the solenoid which are of a different potential.

The illumination of the lamp may be explained by the effects of condensation; the glass being the dielectric, the vacuum and the filament forming one electrode, the moist skin the other.

Third, Phenomena of Resonance.—This will be described under methods of raising tension.

While Hertz, Tesla, Thomson, and others studied these currents from the standpoint of their industrial utilization, D'Arsonval made his researches from a purely physiological point of view. His experiments extended over a period of several years, and have established the fact that high-frequency currents are valuable electrotherapeutic adjuncts.

SOURCE OF HIGH FREQUENCY CURRENT.

These currents are obtained in many ways, and many ingenious devices have been employed for furnishing them. A coil or a static machine may be employed as the exciting apparatus. D'Arsonval employed a low frequency coil provided with condensers, the outer coating of which was connected to a solenoid of coarse wire.

The phenomena of the generation of high-frequency currents from whatever exciting apparatus employed, may be explained as follows: At each rupture of the primary circuit there is produced an induced electromotive force. This electromotive force charges the condensers to which is united the solenoid; the solenoid itself being traversed by the current of charge. In proportion as the charge is effectuated, the difference of potential at the discharge rods of the condenser increases, and when it reaches the limit corresponded to the separation of the balls of the discharge rod, perhaps many thousands of volts, the spark breaks. This spark forms a bridge of feeble resistance by which the charge of the condensers is quickened. The oscillating discharge leaps from one ball to the other, during which the solenoid attached to the external armature of the con-

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denser is traversed by an alternating high-frequency current. The interval of the micrometer is then traversed at the time by a spark of unique direction due to the coil, and by the oscillation of the condenser charge, while the solenoid is only traversed by the condenser discharge and the oscillation of the discharge. The first being relatively slow, cannot give in a conductor resistance of any appreciable tension, so that the only difference of potential which can exist there are those due to the oscillation, which are inoffensive.

PHYSIOLOGICAL PROPERTIES.

The physiological properties of high-frequency currents may be considered under four heads: Their action upon the nervous system, the circulation, the respiration, and the urine.

Action Upon the Nervous System.—An essential property which distinguishes high-frequency currents from all other forms of electrical energy, even when currents of formidable intensity are employed, is that it exercises no action either upon the general sensibility or muscular contractility, there being experienced only a slight sensation of heat at the point of entry and departure.

When sparks are allowed to fall upon a motor point, or upon the skin, there is an action upon muscular contractility which might lead to conclusions that the nerves were impressible to the current. This action upon the sensibility and the pain is caused by the very great density of current and the shock of the spark at the point of penetration. The area treated being very small, the passage of the current develops considerable heat. Small electrodes in immediate contact with skin may set up a sensation of heat which may be disagreeable, whereas large electrodes diminish the density and diffuse the heat. The muscular contractility caused by the spark is due to the discontinuity of the discharge, the brisk variation of the electromotive force corresponding to the establishment and breaking of the spark.

These facts, then, permit this fault of action to be attributed to the extreme elevation of the frequency of the current, our nerves being incapable of responding to excitations so rapid. There is therefore absence of sensory or motor excitation, inhibitory effects, and effects upon the vasomotor system as shown by fall of arterial pressure. The analgesic action in certain cases can be carried so far as to obtain complete local anesthesia. This does not penetrate deeply, and persists from a few minutes to a quarter of an hour. Oudin has shown that the spasmodic anemia produced at the point struck by the spark from the resonator extends for two centimeters succeeded by a true local trophic trouble. There is a slightly painful sensation at the beginning of the operation, which soon becomes absolutely painless.

Action Upon the Circulation: Direct Application, Condensation—There is a vascularization of the skin which is covered with sweat consequent to the action upon the vasomotors. Variations in resistance of the capillaries necessarily excite modification of the arterial pressure. This is diminished if the small vessels are dilated, increased if they are contracted.

When the spark of the resonator is directed upon the skin, one sees about the point touched from 20 to 30 cm. circumference a diffused redness extending to large areas, persisting 20 to 30 minutes with papillary erection, followed by anemia due to a very energetic vasoconstriction. After some instances an erythematous tint may remain many hours, or in some patients many days. One obtains by this process a greater increase of the arterial pressure than that which one establishes after auto-conduction. Oudin has by means of the sphygmomanometer of Laulaine shown that when the effluve of the resonator touches some point of the body there is instantly produced in the capillaries of the hand of the subject a vasomotor spasm characterized by a notable lowering of the general curve. He has sometimes established in the same time a diminution of the amplitude to the pulsations, sometimes almost complete suppression. It presents, nevertheless, before returning to its normal form and amplitude, alternative periods of lowering and elevation which seems at times to produce a series of vasocontractions and vasodilatations less and less accentuated.

Action Upon the Respiration.—Under the influence of the high frequency currents, the number and amplitude of the movements of the respiration increase, and D'Arsonval has shown that the volume of oxygen absorbed and the carbonic acid emitted increases considerably. The examination of the blood made by Tripet before, during, and after treatment at the Apostoli Clinic upon patients affected with different affections, showed that in 37 cases the high-frequency currents increased the activity of the reduction of the oxyhemoglobin in patients with lowered nutrition. In ten cases where before treatment the activity of reduction was exaggerated, the current caused a lowering, approaching the normal. In only six cases the organic loss continued to lower in spite of treatment.

Action Upon the Urine.—By the direct application D'Arsonval has shown that high-frequency currents regulate diuresis, increasing the elimination of extractives, notably urea and also increasing the toxins.

Apostoli and Berlioz made 761 chemical analyses upon 281 patients, and showed that high-frequency currents caused amelioration of diuresis and more easy elimination of excreta, a greater suractivity of combustion, with a tendency of the relation of uric acid and urea to approach the normal average, 1.40. Berlioz noticed with condensation that the nutritive processes appeared more active, that urea, uric acid, phosphoric acid and chlorides were notably increased. Real and Rienzi demonstrated that this treatment diminishes about one-half the neutral or not completely oxidized sulphur contained in the urine. They attribute, moreover, a manifest action upon nuclein shown by the simultaneous increase of uric and phosphoric acid.

Methods of Application—High-frequency currents are applied under different modalities, one utilizing, as the case may be, either direct applications, local applications, auto-conduction, condensation, or resonator applications.

Direct Applications—It is known that high-frequency currents circulate in a solenoid, and a patient being in shunt by being attached to the two points will be traversed by the current. As a consequence of self-induction the solenoid offers a greater resistance, and the current, therefore, passes by preference through the shunt circuit of which the patient forms a part.

In the direct stable application, the patient is connected to the two poles of the solenoid by means of conducting cords attached to metal plates of different dimensions, or covered with moistened felt or chamois and applied directly to the skin. The metal plates should be of such a thickness as to be easily molded to the surface. Care should be taken when applying them to the diseased area to see that there are no folds of the covering, or air spaces between the metal and the skin, for the reason that if this is overlooked ulcers or burns may occur.

Labile applications are made by having one fixed attachment, the other end of the solenoid being attached to an insulated movable electrode.

Local Applications—In local applications a point, wire brush, or metal ball such as are commonly employed for static treatment is attached to one pole of the solenoid by means of a flexible insulated cord. The other extremity can be connected with the patient by means of a large tin plate, attached to the earth, or left free. If one pole of the solenoid is attached to the earth, a greater potential is created at the opposite pole and a larger effluve is obtained.

REACTION PROVOKED BY DIRECT AND LOCAL APPLICATIONS.

The immediate impression experienced by the patient is almost nil, there being only a light sensation of heat at the level of the electrode, or in its neighborhood. On the contrary, if the application is defective, the patient can experience a sensation of burning and slight erythemia. Some patients cannot support the temperature to which a carbon tampon is carried covered with soft wool and ulcerations may occur; others experience a sharp pain when one throws the current into circuit, which pain must be related to lesions of the skin subjacent to the electrode, since it is sufficient to displace this in order to cause the cessation of all disagreeable sensations. There is also noticed in some cases an analgesic action, vasomotor resolution. Lassitude is sometimes observed following the seance persisting for some hours or localized for five to ten minutes.

ELECTRODES.

Different electrodes are used for local applications. Those most commonly employed are metallic brush, point, multiple point, ball, or some form of glass vacuum tubes exhausted to a Geissler or Hittorf vacuum.

The metallic brush should be composed of very fine flexible wire, and is employed in chronic affections of slow progress without any inflammatory reactions. Where effluvation of a limited area is desired, a metal point should be employed. This should have a very sharp pencil point. Where a diffuse application of the effluve is desired, the multiple point may be employed.

For the treatment of sensitive surfaces, as the face or mucosa, or any region where inflammatory reaction has increased the sensibility, glass electrodes should be used. Many types of glass vacuum electrodes have been devised for this purpose. The type I prefer is that provided with a wire running to within one-half an inch of the distal extremity of the tube, and exhausted to a Hittorf vacuum. These may be termed a condenser which discharges itself at each oscillation by a shower of fine, small, and violaceous sparks. These sparks are easily supported by the most inflamed skin or delicate mucosa. Different types of these electrodes are shown in Figs. 1 and 2.

If one approaches the skin with an electrode attached to one pole of the solenoid without completing the circuit by a contact with the other pole, sparks occur which provoke a revulsion much more lively as the action is prolonged. This revulsion is followed at first by a light localized redness very quickly diffused and extending to a surface sensibly greater than that attacked by the spark. The redness persists from twenty-five to thirty minutes after electrization. About the point touched a sort of anemia of the skin takes place, which becomes a chalky white with erection of the papillæ. This condition persists for one or two minutes, according to the subject, then the papillary erection little by little disappears, and the spasmodic anemia of the beginning is succeeded by quite a strong erythematous tint which sometimes persists for several hours. In certain subjects with particularly sensitive skin one can even notice the next day the presence of the erythemia. Oudin (*Annales d'Electrobiologie,* 1898) declares that one can even see "if one prolongs the local action after several hours a phlyctenula at the point touched."

When the opposite extremity of the solenoid is attached to the earth and the electrode is in connection with the patient, the effects are a little less accentuated. It is not easy to utilize the effluve exclusively, because, being almost the same length as the spark, but a slight displacement of the electrode is necessary in order to obtain a spark.

Direct sparks may be administered locally by attaching an electrode to one of the extremities of the solenoid of the exciting apparatus. If the other extremity of the solenoid is grounded or attached to the patient, the sparks are more powerful. This method of application is very little employed on account of the painful sensation arising from the spark. This can be lessened to a degree by replacing the ball or point with a metallic brush, thus diffusing the action to a larger surface. The current, however, is still painful to a

healthy skin and intolerable to a diseased one. The boundary line of the spark and effluve is very short with this application as a very slight difference in the distance of the electrode from the area under treatment causes the spark to jump. For this reason this method of application is very little used. To overcome this one may use either a Tesla coil or the properties of resonance, the last being the means most generally employed. The local applications are thus easily controlled and well tolerated.

The principle of resonance is founded upon the fact that two sonorous bodies may be so constructed as to vibrate in unison yielding the same tone. When this is accomplished it is only necessary to vibrate one to cause the other to enter into vibration. This phenomena is also present in electric vibrations, and Hertz being aware of this fact constructed an apparatus of feeble self-induction and capacity under the name of resonator. This was so constructed that the period of the resonator furnishing sparks coincided with the period of the vibration of the exciting apparatus, and was itself the seat of oscillations.

The diameter of the spires of wires constituting the resonator has no great importance from the standpoint of the production of resonance, but it has a considerable influence upon the physical property of the effluve and spark. If one employs a fine wire one obtains a spark, weak, long, and sinuous, slightly painful, the effluve being also much less nourishing. With a wire of greater diameter the effluve and spark gain in power, these being in relation much more with the total capacity of the exciting apparatus than with its self-induction. It is for this reason that the capacity of the Leyden jars must be feeble.

The maximum speed of a resonator depends upon the establishment of a perfect pitch between it and the solenoid of the producing apparatus. This result is obtained by varying the number of spires in the circuit, thus modifying the self-induction and the capacity. Having established the pitch of the solenoid and resonator, if one changes the relation of the self-inductor or the capacity, they do not vibrate in unison, and the effluve or sparks become smaller and smaller and finally disappear.

Oudin in 1892 devised the first resonator employed in electrotherapeutics, consisting of a solenoid of copper wire, which by a given relation between the number of its turns and the number of turns of the primary solenoid of the exciting apparatus gave a bouquet of effluve or sparks.

His new model is an inducto-resonator, and as consequence of superposition of the primary solenoid upon the prolongation of the resonator, it adds to the phenomena of resonance that of induction.

A new inducto-resonator manufactured by Van Houten & Tenbroeck Co. has proven very satisfactory in my hands. This is so constructed that direct, local, or resonator applications may be made. The effluve is very large, varying from one to four inches. The current strength is regulated by the distance of the discharge rods, attachment to resonator or coil posts or grounding. The yield is superior to that of any other apparatus, and affords a more extended and delicate production of its effects. This is shown in Fig. 3.

The current furnished by the resonator, or the high tension coil, whatever it may be, can in fact be applied to the patient in many ways. The application may be continuous or discontinuous. It is continuous if one employs a copper electrode in immediate contact with the skin or the region to electrolize. It is discontinuous if one employs a wire brush held at a distance, or better, a glass electrode. A brush of metallic wires promenaded upon the skin presents, however, less discontinuity than in the case where the same broom is held at a distance. This distinction has its importance because the reaction of the patient produced by these different applications is different. Local application can moreover be monopolar or bipolar.

Certain apparatus permit of submitting the patient to the effluve or the sparks furnished simultaneously by the two poles of the resonator or the high tension coils. In this case the two poles are active, if one can express it thus, but one can still realize a bipolar application in attaching the patient by an indifferent electrode to the extremity of the solenoid opposite to the pole connected with the resonator. Finally, one can attach one extremity of the solenoid of high frequency to the earth, or better, not connected either with the patient or the earth. In discontinuous applications the effects are varied by modifying the distance of the electrode to the region submitted to treatment. If one wishes to increase the action of the effluve through the body in a determinate direction, one can place upon the region opposite to that where it is applied an indifferent electrode which one uses in the bipolar applications.

The same rssults may be obtained in different conditions by means of a process indicated by Oudin. The lines of force of the oscillations in the body of a patient attached to the resonator can, in fact, be directed in a certain measure towards a determinate region by approaching to the point upon which one wishes to act more particularly a capacity, such as the hand, for example, or a sphere. Break the sparks between the capacity and the body, as the sparks are longer as the density of the current is greater, that is the surface of contact is much smaller. Curiously these sparks are more disagreeable when the patient is struck by the effluve than when he is in direct contact with the resonator.

Glass electrodes diminish and even suppress painful impressions. The anemia of the skin, the erection of the papillæ, and the redness which appears successively in the course and as a consequence of the application, depend upon the intensity of the treatment. The revulsion can be intense and go as far as a vesication if the sparks are particularly powerful or if they are applied for a very long time and very often repeated in the same place. After the seance the patient gener-

ally experiences beside a sensation of heat an impression of local well being. The skin is soft and moist. Often, either during or after the application, one sees small drops of sweat covering the integument.

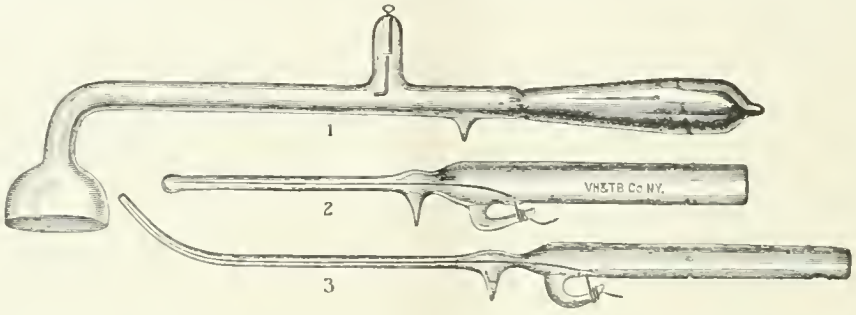
Oudin gives the following hypothesis as to the action of the effluve of resonance. He believes that the skin acts as a dielectric and is traversed with the greatest facility by the effluve which charges the capacity formed by the adjacent tissue to the effluve; it acts as a volumetric capacity which will be submitted to the electric oscillations, spreading itself in all its mass, slowly decreasing, and not as the internal armature of a condenser of which the epidermis may be the dielectric. The alternate waves appear from their point of entry in the body to diffuse in the mass of the organism as the stretch from the surface of still water, parting from the point which has been struck by a stone, or more exactly as sonorous waves expand in the air from a vibrating cord. (*Annales d'Electrobiologie*, 1898.)

Reaction Provoked by Local Applications Affected by Means Which Raise the Tension.—The reaction of the patient varies equally with different conditions. Heat is often produced by the high-frequency currents, as may be noticed when an electrode is taken in the hand and one is struck by the sensation of heat rapidly developed at the points of contact. Oudin has demonstrated that the quantity of energy which circulates in a conductor is relatively considerable and quite superior to that of static machines. (*Annales d'Electrobiologie*, Aug., 1899.) The sensation of heat is specially appreciable when one applies a metallic brush to the skin or when one draws some sparks.

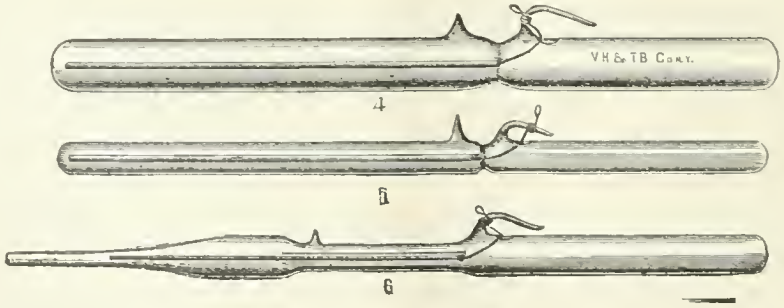
From the standpoint of their immediate action, the effluve and the spark differ much. The effluve provokes only a slight prickling, and is in general well borne. The sparks are more or less painful, according to the condition of their application. They are supported in a variable manner according to the susceptibility of the patient.

INTENSITY, NUMBER AND DURATION OF SEANCES.

The intensity of the current is varied by changing the number of the spires of the solenoid introduced into the circuit. One can modify the point of contact of one of the rheopores upon the solenoid, the other remaining fixed at the same point. Thus one approaches or removes the two doses of the current more or less; but this process has the inconvenience of prolonging the uncertainty necessary to obtain the desired intensity.



It is hardly possible to indicate the necessary intensity to employ. The physician must in each case proceed with caution. Watch with care the first seances of the treatment, and the reaction of the patient will quickly inform as to the advisability of a diminution or an increase of intensity. One cannot fix the rules relative to the duration of seances or their repetition. In general, prolong the application ten minutes and administer three times a week. In certain cases, fifteen-minute applications or daily repetition have appeared to accelerate the amelioration. The conditions must vary with the nature of the disease and the tolerance of the patient.



Auto-conduction is distinguished from all other methods of electrolization by the absence of all contact establishing a communication between the current and the patient. The subject is placed in an oscillating magnetic field engendered in the large solenoid without any communication with it. The solenoid, being traversed by the high-frequency currents, induces extremely powerful currents, not only on the surface of the body, but as far as the intima of the tissues. A horizontal or

vertical solenoid may be employed of a size which will enable the patient to stand up or lie down.

Apostoli employs two methods: a solenoid without contact or a solenoid in which the patient is in contact by grasping one of the poles in this arrangement. The patient is in monopolar shunt, while at the same time he is submitted to auto-conduction.

In the beginning of the seance, or immediately after, some patients will complain of headache, with inability to read, vertigo, and nausea, accompanied by immediate and rapid malaise. After a few hours this reaction may be followed by fatigue and extreme lassitude, with a return of old pain which appeared to have been suppressed. According to Apostoli, this reaction, if existing, attains its maximum intensity in the solenoid without contact, being less for the cage with contact.

The hysterical anesthetic presents these reactions most particularly. In the majority of cases, however, this mode of application rarely provokes so accentuated reactions. In senile rheumatics, certain diabetic, the anemic or chloro-anemic, the reaction may run from a simple sensation of lassitude to an impression of overwork.

Denoyes found that no sensation other than a slight prickling or feeling of heat either during or after the treatment was experienced in some cases. At the end of the treatment some complained of the above symptoms to a mild degree. Apostoli studied this phenomena very carefully, and concluded that where such reaction appeared it constitutes a contraindication for the use of auto-conduction.

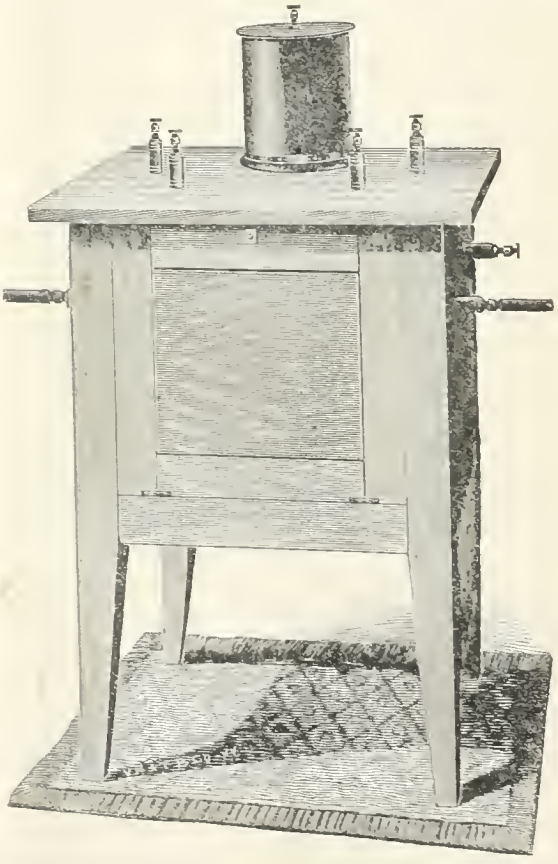
These reactions may be provoked in the beginning, gradually weakening, and finally disappearing as treatment continues. In others it may not appear till after the second or third seance, especially as they are prolonged. Finally a brisk increase of the regular durations of seances causes appearance of troubles which up to that time may never have been manifest.

It would appear from these different reactions that some precautions should be taken in the application of auto-conduction. It is always well to begin with short seances, two or three minutes, progressively increased. This obviates disagreeable and discouraging first impressions.

CONDENSATION.

This method consists in placing the patient so that he constitutes one of the armatures of a condensor. Upon a couch or sofa is placed a sheet of lead, tin, or zinc, attached to one of the extremities of the solenoid. Over this is laid a mattress of insulating material upon which the patient reclines. Fixed in movable contacts attached to the other pole of the solenoid in an intermediate point are grasped by the patient. The whole of the system constitutes a condensor. The patient represents one of the two armatures, the metallic plate by the other, the mattress forming the dielectric. By this system a current of as much as 300 milliamperes can be made to pass through the patient. At each oscillation, in fact, the condensor is charged and discharged.

We know that high-frequency currents circulate perfectly in open circuits since the least capacity enters in play. However feeble may be the capacity, the charge and discharge is repeated hundreds of times per second under a raised potential constituting a notably mean current. One also can observe the passage of a current or the production of sparks when one approaches or touches a single point of the solenoid. In this case the body constitutes an insulated surface which is charged at each oscillation of an almost constant quantity, and which is at a certain distance from



the solenoid. The corresponding charge of a contrary sign should be found upon the parts of the spiral which are at this moment of a different potential.

Reaction Provoked by the Method.—The patient submitted to the application generally experiences only slight trembling in the hands at the immediate point of contact with the current. This sensation, according to Apostoli, is always well borne and must never go so far as to cause pain. It is easy to establish the fact, however, that the subject placed upon the *lit condensateur* is really electricized. If one lightly touches the skin with the finger ends, he can perceive small painless sparks. If one approaches the hand to the patient's head without breaking the sparks, there is often experienced a sensation difficult to explain,

and which can be spoken of as a heavy head. Apostoli stated that intolerance is manifested for most patients to a lesser degree under condensation than under the large solenoid. Denoyes finds, however, in senile rheumatics, certain neurasthenics, vertin diabetics, anemics, and chloroanemics, that the *lit condensateur* is more fatiguing than the cage. The intensity of the current to which the patient is submitted varies with the regulation of the producing apparatus.

It is not possible in so short an article to furnish a formula of the indications of high-frequency currents because of the diversity of their methods of use and the extent of their field of application. It can be said, in conclusion, however, that they have been employed and given excellent results in diseases due to lowered nutrition, affections respiratory tract, affections alimentary canal particularly, constipation, hemorrhoids, and anal fissure, neurasthenia and neuritis, articular affections of different origin and in great number of dermatoses.

The only contraindications for high-frequency currents is any valvular disease of the heart, or those suffering from hysteria.

ARTHRITIS DEFORMANS AND ITS TREATMENT.[1]

BY LOUIS KOLIPINSKI, M.D.,
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The arthritis deformans of Virchow (1869), which possesses twenty-five or more synonyms, was first correctly recognized as a particular disease by Landré Beauvais in the year 1800. It is a chronic degeneration of the joint cavities, and has a special and distinct symptomatology which for centuries was confounded with gout, with rheumatism, and other infectious diseases of the articular apparatus.

Its etiology is as yet undiscovered. Its pathology consists in mucoid degeneration and disappearance of the central part of the cartilage; erosion and eburnation of the exposed bone; hypertrophy and fatty degeneration of the synovial membrane; newperipheral cartilage growth, and later ossification thereof.[2] A. E. Garrod says there is a fluid effusion, others, that the parts are dry. With these profound changes, fibrous adhesions do not occur, and bony ankylosis only in the disease of the vertebral column. There is secondary atrophy of the voluntary muscles and an anemia, blood abnormal in hemoglobin and red blood corpuscles.

The disease may seize upon the joints of the upper and lower extremities, with or without involvement of the vertebral column and of the temporomaxillary articulation. Its invasion is centripetal and symmetrical (this is the polyarticular or multiple form).

In both sexes and at all ages except infancy, it is five times more common in women than in men. Most cases develop between forty and fifty years, either as an acute inflammatory outburst or insidiously with pain and stiffness most felt at night and in the morning. It is the most frequent acute or chronic disease of the joint system, and much oftener encountered than articular rheumatism, gout and the several joint infections combined. Multiple arthritis deformans is so common in middle-aged and elderly females that the theory of it being a senile change is at least plausible.

The disease has acute exacerbations simulating mild articular rheumatism with slight febrile temperature. There is constant complaint of pain, articular, muscular and neuralgic; of stiffness of motility, tenderness of the joints. The swollen joints stand out more prominently, because of the wasted muscles.

This fixation of the joints may, by natural progression be temporary or permanent, limited to the knees or vertebral column, or so general that the helpless victim, with mummy-like rigidity, cannot even use the jaw in mastication. There is no spontaneous recovery, and the afflicted live for years. The termination of the disease in its natural course is rude and truly deforming.

The monarticular or senile form affects the vertebral column most disastrously as spondylitis deformans, more common in men; malum coxæ senile, in both sexes. Occasionally it also affects a shoulder, elbow or knee. That these varieties all belong to the same affection as the polyarticular is proven by the fact that all have symptoms present in common, which must always be considered for correct diagnosis, to wit: (1) Heberden's nodes of the phalangeal joints of the fingers; (2) numbness and tingling of the hands and forearms; (3) crepitation of the knee-joints, especially of the left side. This is produced by pressure on the patella with rapid flexion and extension of the leg; (4) a pulse of 100 or more beats per minute. Heberden's nodes and knee crepitus are found in every case of arthritis deformans.

The indications for treatment of this extraordinary malady in our present imperfect knowledge of the same is comprised in the following summary: (1) Relief from pain; (2) correct the stiffness and rigidity of the affected joints and muscular contractures; (3) increase the muscular strength; (4) cure the anemia; (5) increase, where necessary, the body weight; (6) symptomatically regulate or slow the pulse.

To fulfil these indications three agencies are necessary, and so indispensable is each one that no two alone will suffice to achieve good results. They are (1) for pain, anemia, the rapid pulse and malnutrition—arsenic; (2) for stiffness, contracture and muscular atrophy: voluntary exercise; and (3) for weakness, anemia, loss of weight and the pain, greater nutrition brought about by increasing and selecting the food supply.

Arsenic was recommended by Bardsley in 1839, and has been approved by Fuller and Balfour, by Strümpell and others.

1 Read at the Annual Meeting of the American Therapeutic Society, New York City, June 4, 1904.

2 Archibald E. Garrod. Arthritis Deformans Twentieth Century Practice, Vol. ii. Alfred Pribram. Nothnagel; Specielle Pathologie und Therapie, Band 7, 5. Theil.

Success with arsenic depends on the method, manner and length of time. It should be used a year or more. It must be so administered that mild arsenical poisoning does not occur, namely, edema, headache, nausea, vomiting and diarrhea. In using arsenic, arthritis deformans may be divided into the mild form, the common polyarticular one, where the chief symptoms are stiffness and pain of no great intensity, and the severe or monarticular variety: spondylitis deformans, malum coxæ senile and all cases where the patient is helpless and bedridden.

For the mild type, one or two drops of the liquor potassii arsenitis U.S.P. after meals thrice a day may be used for a very long time, with very satisfactory results. The pains, whether muscular, articular or neuralgic, disappear after a month or two. When this has been achieved, the treatment must continue with unremitting regularity.

Arsenite of zinc may be used instead of Fowler's solution. The dose is one-twelfth of a grain in the form of a pill, repeated twice a day. In the severe forms the arsenic is used in hypodermic injection, as by the mouth the effects are too slow and uncertain. The risk in loss of time is too great a venture. An injection should be made in the lateral gluteal region every third or fifth day. In 60 minims of boiled water are dissolved three-eighths of a grain of sodium arsenite and 1½ grains of sodium of chloride. This solution is painless, unirritating and never causes abscess. As in the former form of medication, these injections should be continued for a year.

Mechanical treatment of the active kind is best in all cases. The patient must be encouraged to help himself. Passive exercise is demoralizing because it produces apathy and engenders an expectation of improvement that does not come.

The principle to be impressed upon the minds of the afflicted is that rest for a limb is harmful. Rest in bed aggravates the disease by favoring immobility of the joints. Daily exercise is beneficial, though productive for a time of pain and discomfort. Daily walks and rides, household and other manual occupations are necessary in the mild forms. For the severe and advanced stages, the use of dumb-bells and calisthenic exercises to give strength and vigor to the upper extremities; daily locomotion with regulated and increasing distances for the lower limbs. Where there is much impairment of function in knee or hip, this exercise must for a long time depend on the aid of crutches or stout walking cane.

A valuable means of restoring the power of locomotion when abolished through partial anchylosis and muscular atrophy is the daily use of the pedals of an ordinary bicycle secured to the top of a short upright bar or post. It rests upon an appropriate stand or pedestal. The patient seated upon a chair or astride a trestle, can, by making the pedals revolve with his feet do much to accomplish improvements and cure. In many cases the radius of excursion in the patient's limbs is so restricted that in the beginning it will be necessary to secure the pedals nearer to the central axis than is found in the contrivance employed. The shafts therefore are perforated with holes at regular intervals into which the pedals when screwed make the rotations larger or smaller. At first also it may be necessary to secure the subject's feet with straps to prevent them from slipping, or else to hold them by hand until sufficient voluntary control of motion is acquired. By keeping a record of the number of revolutions to the point of muscular exhaustion the very great benefit derived from this exercise will be made apparent to the victim of the disease. Starting with twenty-five or fifty small and painful turns a day, in a month or so two thousand easy rotations are made. In fact, the speed and strength reached may surpass the powers possessed by one in health.

The dietetic treatment is of great importance. Improvement cannot occur without it. There is in arthritis deformans, loss of weight, muscular atrophy and anemia. To counteract these, food consumption is the best of means.

The diet should be varied, liberal and mixed, consisting in the daily use of meats, fowl, game, fish, eggs and all varieties of vegetable food. The patient's appetite must be tempted and whetted by gastronomic and culinary art. In addition to three regular meals a day, the consumption of three or four pints of milk at other hours, and at night, is the best of means for improving strength and weight.

Dessert is forbidden, and fruit particularly does harm, with the solitary exception of the watermelon. Alcoholic drink, malt liquors, wines, and the stronger spirits should not be allowed. An intestinal irritation, with palling of the appetite is the objectionable feature of fruit eating; a gastritis or hyperemia of the stomach the reason for not allowing strong drink.

With these restrictions the patient is encouraged to enjoy the pleasures of the table, and he should be impressed with the maxim that poor man's gout can be cured only with the rich man's board.

Concerning the beneficial effects of nutritious and varied food in arthritis deformans, there is no question in the minds of those who have of recent time engaged themselves in the treatment of the disease, and it is a remarkable fact when one recalls that so able an observer as Jonathan Hutchinson has considered its etiology as hereditary gout in the female sex.

Local applications are of temporary value and purely anodyne. The oil of wintergreen or salicylic acid thus used may receive a moment's praise from the patient.

A much better application than either, and probably the best of its class, is the emplastrum hydrargyri United States Pharmacopœia, whose action on both local pain and stiffness is marked. In the disease of the vertebral column and sacroiliac and sacrococcygeal articulations its benefit is decided. It may be freely used, as toxic symptoms of mercurialism do not occur.

Of other treatments than that here described the writer has seen no good results and sometimes evil ones. The hot-air treatment, general and local, electricity, galvanic, faradic and static, electric light bath, poultices, hot-sand bath, mud bath, hot bath, cold bath; ice frictions, Roentgen rays, massage, all of these do not cure arthritis deformans, and entail expense, inconvenience and loss of time without compensatory benefit. Ocean voyages, various health resorts and mineral springs—arsenical; iron, sulphur, saline and alkaline—are so restricted in their usefulness, when we consider the immense number of the victims of this disease in the world, that to hold such resorts a means of cure looks pitiful.

Our remedies for the treatment of articular rheumatism, and gout, do harm when given in arthritis deformans. They do not mitigate the pain; they do so diminish the patient's digestion, weight, and strength so speedily that he grows more helpless. This applies to the salicylate salts and the oil of wintergreen, to lithium, the iodides, colchicum and various coal-tar products.

The syrup of ferrous iodide, recommended by A. E. Garrod, may possess some virtue, but cannot be compared to arsenic when used as here given. Good authorities praise elementary iodine, and also sulphur, but both are feeble props in aiding those who have this disease.

With the means here described arthritis deformans can often be cured; and at times the results are rapid and brilliant. The gloomy prognosis which overhangs the staid and erudite descriptions in our medical literature is founded only on the natural termination of a disease process which has run its course, unopposed by appropriate treatment.

PARATYPHOID; A CASE OF THE HEMORRHAGIC VARIETY.*

BY T. H. EVANS, M.D.,
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In Philadelphia we have typhoid, like the poor, always with us. By the same token this wealth of clinical material ought to be the means of enlarging our understanding of the disease. Its manifestations are not always sure to follow the typical course, and here, as elsewhere, instances of what might be termed paratyphoid, occur.

The hemorraghic form of typhoid fever is the result of Eberthian infection. The disease will follow a fairly ordinary clinical course, with the exception that the fever, while undergoing the diurnal elevation and morning fall, may show less temperature, or a more variable range of it, somewhat of the appearance of what is noted in the general reaction accompanying slight local suppurative processes.

It is known, indeed, that the specific microorganism is recoverable[1] from the rose spots and from most of the viscera, as well as from the functional secretions and excretions of the body, in the usual form of typhoid.

In the hemorrhagic variety, however, during the late second or early third week, sudden and severe, at times, perhaps, insignificant hemorrhages occur from one or many of the special mucous membranes, *e.g.*, the nasal, conjunctival, tympanic, oral, pharyngeal, urethral, vaginal or rectal. The skin may offer a sort of hemic leakage, as noted by Samohrd in three cases.

A particular, local Eberthian infection is the cause of this; for in the hemic discharges, as well as in the tissues firstly concerned, the *Bacillus of Eberth* is freely found, and no evidences of secondary septicemia have been reported.

In the five cases of this hemorrhagic variety of the disease, reported by Samohrd,[2] it was a case of the lightest sort which alone proved fatal. There had been a certain tendency to cutaneous hemorrhage and slight urethral leakage, but the general effects were pronouncedly sthenic.

April 15, 1904, I was called in to the following:

Case.—Miss Emma B. aged twenty-four years. Had been suffering from headache, gastric irritability, constipation, cough, and malaise for two weeks. This day was third of menstruation at proper time, though as usual scanty and painful. History of menstruation begun at fifteen; had had usual diseases of childhood, but no previous attack of typhoid. On examination the viscera appeared in normal relations, except the spleen, which was enlarged from 1.0 cm. to 2.5 cm. in each direction; palpable and tender. Tenderness in right iliac fossa. The spleen continued to be a decided source of annoyance for the next four weeks. At the first, there appeared some bronchial irritation, which did not continue into the next week. Temperature first noted at noon was 38.6° C.

Typical typhoid facies; the patient put to bed at once on suspicion, and cold sponging resorted to, with the administration of dil. hydrochloric acid and salol. For two weeks the fever continued, with a daily range of 37.9° C. to 38.8° C., and higher; at the beginning of the attack 39.6° C. being reached. May 4, the Widal still negative. May 1, there occurred a profuse vaginal discharge of blood, which was not mentioned to me until it had continued, with intermissions, for three days. The girl's mother had thought it possibly a return of the menstrual flow.

The discharge, however, was brighter in color and of a rather different nature. Menstruation had occurred at the proper time two weeks previously. This extraordinary hemic leakage returned off and on during five days. May 3, the temperature in the morning was normal; at 7 P.M. 37.5° C., May 5, the usual subnormal morning record appeared. The typhoid facies no longer was noted, and the Eberthian infection apparently had been subdued. Treatment continued with cold sponging, and dil. hydrochloric acid. But the salol was exchanged for protonuclein. Splenic enlargement and tenderness remained a prominent feature. The patient seemed much exhausted by the disease, more so than in

* Received for publication May 25, 1904.

proportion to the amount of fever, which latterly had been moderate, I think, due to the cold water treatment. The appearance of the patient was asthenic rather than sthenic, after the second week. Light diet was ordered on May 13. A recurrence of slight temperature the next day, and a hint of duskiness in the face, warned us that it was too soon. Milk diet was again ordered. The bowels required daily enemas, from the first week. Finally, on May 18, an increase of diet was accomplished, and from then on the return of health has been assured. The Widal was positive when applied May 16. No further vaginal hemic leakage has since been noted.

This is one of a great number of cases of enteric fever I have seen showing very moderate temperature range. In regions where typhoid infection is prevalent it may be possible that many cases of Eberthian infection are so atypical as to escape diagnosis. The clinical progress of the case, however, ought to cause its proper recognition.

One fever case, which I had in March, gave a negative Widal, but showed unmistakable typhoid symptoms, notwithstanding a temperature range that never passed above 38.0° C. It was impossible in this case to resume solid diet until five weeks following the initial febrile stage, although the attempt was twice made and given up on account of immediate return of temperature, which had been subnormal.

As to the pathology of the hemorrhagic form of Eberthian disease there is obscurity of opinion. Clinical study will be in advance of an exact determination of the facts. Some reaction probably does occur in the parenchyma of the mucous structures of the body other than the mucosa intestinalis.

Samohrd suggests the possibility of a "more than commonly virulent species of the specific micro-organism." This, attacking the walls of the smaller blood vessels, would predispose to hemorrhage through the degenerated areas in their continuity. Very few comments on the etiology can be found in the literature of this subject. I have thought it possible that in the cycle of development of the bacillus the elimination of toxins could be different in degree or kind. The individual's reaction may be modified according to idiosyncrasy.

1 Tyson, Practice of Medicine.
2 Sbornik Klinicky, Tomo V, fasc. 1, 1903, and abstracted in Il Policlinico, Rome, No. 21, 1904.

Diphtheritic Paralysis and Antitoxin.—The cases reported by other observers and those that were under his own care, led J. Comby (*Arch. de Méd. des Enfants*, July, 1904) to advocate the use of diphtheritic antitoxin in the case of all children affected with diphtheritic paralysis, whether or not they have been treated with this for the original disease. In the first place, there is no risk. In the second place, one is not certain that the original infection has entirely exhausted its virulence. The beneficial and quiet results obtained in arresting the progress of cases of diphtheritic paralysis and effecting a cure in three to ten days form ample justification for the above treatment.

INTESTINAL OBSTRUCTION FOLLOWING APPENDICITIS OPERATIONS. REPORT OF EIGHTY-SIX CASES.

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(Continued from Page 406.)

THE LITERATURE AND UNPUBLISHED CASES.

In a paper published by Dr. Lucius W. Hotchkiss (*Annals of Surgery*, November, 1901), there are reported all the cases appearing in the records of the Transactions of the New York Surgical Society since 1893. In this series there were fifteen recoveries and six deaths. Dr. Ellsworth Eliot, Jr., in the Medical News of September 26, 1903, reports three cases, two recoveries and one death. At a meeting of the New York Surgical Society held December 9, 1903, three cases were reported. One by Dr. Hotchkiss followed several weeks after the appendicectomy, in which there was also a small abscess. In the successful operation for obstruction, an abscess was opened in the pelvis. This abscess had caused adhesions, which themselves had produced an angulation in the gut. Dr. Brewer reported a second successful case following a year after the original operation, the obstruction having lasted one week, where seven inches above the cecum a band had caused a kinking of the intestines. The third successful case was operated upon by Dr. Willy Meyer, eleven days after the original operation. In the second operation nothing was done but the opening of a secondary abscess. The adhesions about this abscess or possibly the pressure of the abscess had caused a kinking of the intestines.

Dr. R. H. Follis, Jr. (*Johns Hopkins Hospital Bulletin*, 1903, XIV, 86-88), reports operating for appendicitis abscess. After three days obstruction developed, for which he performed an intestinal fistula. Patient did well for eighteen days, when a second obstruction developed, due to occlusion of another loop proximal to the site of the loop first opened. For this likewise a second fecal fistula was made. Normal bowel-movements were soon established and the two artificial ani eventually closed of themselves.

L. Bérard (*Bull. Méd.*, Paris, 1902, XVI., 286-288) successfully operated on a case of obstruction seven years after an undoubted case of appendicitis, where he found many adhesions and a complex volvulus.

Otto Meyer, of Hamburg, reports in the *Deutsche Praxis* (München, 1901, X., 412-414) operating upon an appendix abscess. A more or less general peritonitis ensued, resulting in what were thought to be a number of localized abscesses. Intestinal obstruction set in two weeks after the first operation, and on account of the patient's serious condition, operation was not performed. In its place a needle was inserted into the dilated intestines six times in thirty-six hours, each time with relief of the obstruction. No operation was done and the patient made a perfect recovery.

A. M. Cartledge (Louisville monthly *Journal of Medicine and Surgery*, 1900, VII, pp. 1-4) publishes a case illustrative of a different type than the preceding. Two days following the opening of an appendix abscess, he had to make an artificial anus for intestinal obstruction. Three months later he operated to relieve this obstruction, and found the difficulty to be due to contracted adhesions which had narrowed the lumen to the size of a lead pencil. In the discussion which followed the reading of this paper, Dr. W. C. Duncan said that he had had six cases of obstruction following within a few days after appendicitis operations. In all these he had made fecal fistulæ. Four out of the six died.

Broca writes a very interesting article, reporting six cases, in the *Gaz. hebd. de Med. et Chir.*, 1901, XLVIII., 445-450. He divides the cases into two classes: First, those cases of appendicitis which develop obstruction before the original wound has healed—"early" obstruction; second, "tardy" obstruction; this suddenly appears after a period of perfect health of varying duration, in a person who has already had an appendicitis, either suppurative or non-suppurative, previously operated upon or not. He cites three cases in each class, and comes to the conclusion that different operative measures are necessary in each class.

First class cases: Appendix abscess opened July 4, 1896, appendix not removed. Six weeks later obstruction preceded by progressive constipation lasting four days; operated upon by median incision. Adherent band divided. No relief. Death followed. Autopsy revealed mass of adherent intestines, matted together, in the pelvis. Second case almost a counterpart of the preceding. Localized abscess opened December 9, 1899; appendix not removed. Fifteen days later gradually increasing obstruction. Operation by median laparotomy showed multiple kinkings in an adherent mass of intestines. Death. Autopsy in addition showed a small secondary abscess. In the third case a different method of procedure was employed. On February 6, 1900, an appendix abscess was opened, appendix not removed. Six weeks later obstruction developed. Median wound not made, but the original wound was enlarged. Two openings were made in two adherent coils of intestines, but nothing but gas came out. Adhesions internally carefully separated and a band of omentum found to constrict intestines. Feces then came through the fistulæ. Recovery. Two months later an attempt to close the fistulæ resulted fatally.

Second class of cases represents "tardy" obstruction, which comes on after a longer or shorter period of perfect health, following complete recovery from an appendicitis. The first case was operated upon in December, 1897, and a chronically inflamed appendix removed. Fecal fistula resulted, but closed spontaneously later. On July 1, 1898, operation for obstruction of three days' duration. Wound was reopened, but nothing was found there. He then made median opening. A loop of small intestine was encountered, twisted into a U-shape by a double band in the mesenteric edge. This latter divided. Obstruction not relieved. Death. Autopsy showed an additional obstruction caused by a twisted loop of small intestine, adherent behind the ascending colon.

The second case was operated on July 25, 1898, for a non-suppurative appendicitis. Quick convalescence. Well until February 19, 1899, when obstruction set in. Operation four days later. Median laparotomy. Band found compressing the ileum at its junction with cecum. Obstruction seemed relieved, but patient died a few hours later of shock. The third patient had had seven years previously a severe attack of appendicitis, which was treated medically and from which he recovered perfectly. July 7, 1900, he was seized very suddenly with all the symptoms of obstruction, for which he was operated on in twenty-four hours. Median laparotomy. Band found attached by one end to the intestine, and by the other to the pelvic wall, causing bending and compression of the loop, the two extremities of which were adherent. Division of the band and separation of the adhesions. A second compressing band was found in the right iliac fossa. Recovery. Broca comes to the conclusion from these cases, that cases belonging to the first category had better not be operated upon by a new median incision, but a distended loop of intestine searched for in the old wound, which, when found, should be opened, thus forming an artificial anus without opening the general peritoneal cavity. Later on, after many of the adhesions had become absorbed, the fistula could be closed, if it had not done so of itself. He thinks that the mortality would be much less by using this plan of procedure. In the "tardy" cases he unreservedly recommends a median incision below the navel.

J. B. Murphy (*Chicago Clinical Review*, 1895, V, 645) reports three cases all recovering after operation: (1) In August, 1895, he opened an appendix abscess, not removing the appendix. Subsequently the patient had several severe attacks of almost complete obstruction, for which he operated in April, 1896. He found the cecum adherent to the abdominal wall. A loop of ileum had become wedged in between the cecum and the abdominal wall, and was consequently much compressed. Recovery. (2) In December, 1894, he drained an appendix abscess. In February, 1895, he removed the appendix, following which the patient had four or five attacks each month of abdominal distention, vomiting, severe constipation, the attacks becoming gradually more severe. In June, 1896, operation disclosed a loop of ileum bound down between the cecum and small intestine, the part of the intestine proximal to the constriction being distended, the distal portion contracted. Recovery. (3) In June, 1895, a patient had a severe attack of appendicitis from which he was in bed four days. Following this he had several other attacks of the same difficulty. In January, 1896, after an attack of complete obstruction, he was operated upon. On separating

a mass of adherent intestines, there was found an almost completely flexed loop. Recovery.

Brunton ("Transaction of the Clinical Society," London, 1893, XXVII, 196) reports a case of obstruction due to narrowing of the lumen, the result of recurring appendicitis. The patient had the first attack in May, 1892, followed by five attacks. The last one was in May, 1893. On September 1, 1893, appendicectomy. Twenty-four days thereafter the patient was operated upon for an obstruction of two days' duration, in which there was fecal vomiting. He found a mass of adhesions producing kinking of a loop. Recovery.

G. Marion (*Gazette des Hôpital*, Paris, 1900, p. 1439) has published an exhaustive article on the subject, reporting five cases with one recovery: *Case I.*—Operation, June, 1900, for an acute appendicitis. In September following, operation for obstruction, preceded for twelve days by obstinate constipation, for four days by total obstruction, and for twenty-four hours by fecal vomiting. Median laparotomy. Small intestine some distance from cecum found much distended. Beyond this point, near cecum, intestine was collapsed. Between these two portions in the right iliac fossa was a mass of adherent small intestine, folded and twisted on each other tightly. Recovery. *Case II.*—Operation, May 1, 1900. Gangrenous appendix with general peritonitis. Thirteen days later symptoms of obstruction. Operation, May 17, 1900.—Original wound opened. All the bowel found adherent, twisted, and compressed with no possibility of their being liberated. Cecum incised. This simply produced emptying of the cecum itself. Incision in a coil of small intestine likewise produced only a limited evacuation of the contents of the immediate neighborhood. Autopsy showed practically the whole extent of the intestines agglutinated. *Case III.*—Operation, March 30, 1900, for appendicitis of two days' duration. April 11. Vaginal puncture for abscess in the cul-de-sac. April 21. Operation for obstruction of three days' standing. Findings—great mass of generally agglutinated intestines. Artificial anus made. Death. Autopsy showed the same unrelievable condition present as on operation. Marion here remarks that in many of these cases with a great mass of adherent bowel involving almost its whole extent, it is most difficult to decipher the exact cause as well as the exact site of the obstruction—it may be produced by tension, by bending, by strangulation, by volvulus, etc. These cases result from a general septic peritonitis, and an artificial anus seems the only resource. Another class of cases shows obstruction to be due to localized adhesions, in illustration of which he cites two operations. *Case IV.*—This patient had had a number of years before an appendicitis, for which there had been no operation. In July, 1900, operation for obstruction of several days' duration. The small intestines were found plastered to the cecum in an almost inextricable mass. Death. *Case V.*—This patient had had three antecedent attacks of appendicitis, the last one a month previously. Obstruction existed for four days. Operation.—In cecal region many dense adhesions. Artificial anus. Death. Autopsy showed in the mass of adherent intestines about the cecum a volvulus absolutely constricting the bowel.

Dr. Samuel Lloyd has had four cases of obstruction occurring at varying intervals after a primary appendicitis operation, none within two weeks thereafter. All recovered after operation. *Case I.*—An intestinal coil was adherent to and wound about another loop so as to produce a constriction and total obstruction. *Case II.*—In this case the omentum, forming part of the abscess-wall, was so tightly wound about a coil as to shut off the fecal circulation. *Case III.*—Gangrenous appendix removed. Three weeks after the primary operation, complete obstruction. Operation disclosed the fact that the adhesions in the wall of the old abscess had loosened up, and through the opening thus caused a loop of intestine had slipped, producing a strangulated hernia. *Case IV.*—Abscess alone opened at the primary operation. At a subsequent operation for obstruction, the appendix was found tightly wound about a coil and very adherent, producing obstruction at this point.

Dr. F. H. Markoe has had the three following unpublished cases: *Case I.*—Male, aged forty years. Operation in 1886 for perityphlitic abscess without removal of the appendix. In September, 1894, operation for obstruction, due to adhesions binding the ileum to the old appendix site. Recovery. *Case II.*—Boy, aged eleven years. Operation for acute suppurative appendicitis, September 14, 1889. One month later operation for obstruction due to adhesions resulted fatally. *Case III.*—Girl, aged thirteen years. Operation for suppurative appendicitis, November 29, 1895. Four days later an operation for obstruction resulted fatally.

Dr. Arthur L. Fisk operated upon a case of gangrenous appendicitis with a general peritonitis. Six days later a secondary abscess was opened. Twenty days after the first operation, acute obstruction. Operation disclosed complete kinks in two different places buried in a mass of adhesions. Recovery.

Dr. J. B. Lee gives me the following case: Interval appendix operation June, 1903. No pus, but a few adhesions found. No drainage. Well until November 14, 1903, when he was seized with abdominal pains and vomiting. Large result from high enema. Obstructive symptoms then gradually developed. November 17, he had had no passage of feces or gas for two days. Fecal vomiting set in and distention. Patient having previously refused operation, consented on November 17. Median incision. A band was found stretching from the mesentery, passing over the ileo-cecal junction which it compressed, attaching itself to the abdominal wall. Behind this band a loop of ileum had wedged itself in. The large intestine was collapsed and the small was much distended. After division of the band, gas passed

onward into the collapsed intestine. Death in two days was apparently due to peritonitis, although the bowels had not acted after the operation.

Dr. L. W. Hotchkiss has operated upon these two unpublished cases: *Case I.*—Male, aged 2½ years. Operation, July 21, 1903, on the fifth day of the attack. Appendix found with gangrenous tip surrounded by a small abscess. A secondary abscess opened behind and above cecum. Operation for obstruction, August 7, 1903. Median incision. Angulation found at the cecum due to adhesions. Recovery. *Case II.*—This is a very interesting case of immediate obstruction. Male, aged twenty years. Operation, November 14, 1903, acute gangrenous appendicitis with abscess and progressive peritonitis. On account of intractable vomiting, advancing sepsis, and no bowel-movement, operation two days after the first operation. Median laparotomy. Some free, dark, foul fluid in peritoneal cavity. A mechanical obstruction was found due to adherent band on right side producing a kink. Recovery from this procedure. Ten days later a second obstruction developed suddenly and was rapidly fatal without operation. In addition both wounds were infected and patient was septic.

Dr. Robert Abbe has had five cases of obstruction following appendix operations. All recovered after operations for the obstructions.

Dr. Joseph A. Blake has kindly given me the following three interesting cases: *Case I.*—M. A., female, aged thirty-one years. Operation for chronic appendicitis five weeks previously (operator unknown); no drainage. Obstruction had lasted five days. Operation disclosed the intestines obstructed in three places by fairly strong bands. Adhesive and purulent peritonitis in lower half of abdomen. Leakage of appendical stump. Death in forty-eight hours from sepsis. *Case II.*—J. T., male, aged thirty-two years. First operation January 8, 1901, for appendical abscess. Appendectomy and drainage (tube). Second operation February 21, 1901. Celiotomy for a secondary abscess, situated just below the liver, imbedded in a mass of adhesions. Drainage. The third operation was on March 26, 1901. Intestinal obstruction found, due to adhesion of loop of small intestine to abdominal wall, and a resulting volvulus. Resection of three inches of bowel and end-to-end union with Murphy button. Death on third day from peritonitis. *Case III.*—This case is one of acute intestinal obstruction due to bands, resulting from attacks of recurrent appendicitis without operation. At the time of operation patient was also suffering from appendicitis in the third day of the attack. C. A., female, aged eighteen years. Operation revealed the appendix acutely inflamed, strictured, and distended, fresh adhesions. A loop of ileum, twelve inches long, found strangulated under a band (adhesion), and gangrenous. Appendectomy; resection of gut; end-to-end union Murphy button. Recovery.

Dr. C. L. Gibson has reported to me this unpublished case: J. H., aged eleven years; operation August 13, 1902, for a first attack of appendicitis of three days' duration. There was a gangrenous appendix and free pus in all parts of the abdomen. Drainage was accomplished by an incision along the outer border of each rectus and a third in the epigastrium. Continuous irrigation was maintained for twenty-four hours. Marked improvement followed the operation, and patient was getting progressively better when on the ninth day vomiting and failure of bowel-movement set in. Operation next day. Cecum was found distended with fluid feces. Source of the obstruction not sought for, an artificial anus being made in the cecum. Temporary improvement, but death next day.

Kocher, in an article on ileus in general (*Mitteil. aus den Grenzgeb. der Med. und Chir.*, 1898, p. 227, Vol. 4), reports two cases of obstruction in patients who had had previously attacks of appendicitis unoperated upon, both due to bands from old adhesions. One patient had symptoms of obstruction for ten days, and gangrenous gut was found. This patient finally recovered, although convalescence was complicated with an abscess. The second case had a firm band binding the intestine so firmly as to completely obstruct its lumen. Recovery.

Dr. George E. Brewer has kindly furnished me with the following two unpublished cases: *Case I.*—L. R., aged thirteen years. Acute appendicitis with abscess fourteen months ago; convalescence delayed by prolonged suppuration. Admitted to Roosevelt Hospital, November 3, 1903. Sickness began five days ago with umbilical pain, vomiting and general weakness. Bowels moved once following enema. No flatus nor movement since. On admission, moderate distention, generalized tenderness; temperature 101° F., pulse 120 and weak. Median incision six inches. Transverse colon collapsed and traced downward to right inguinal region, where a dense band was found passing from appendix stump to pelvic basin, beneath which was found about three inches of ileum. Constricted loop, dark chocolate color. Bowel above this loop distended. Loop freed by division of band, stitched near surface wound, injured intestine guarded by omental reinforcement. Wound closed with drainage. Recovery. *Case II.*—A. B., aged twenty-seven years. Has had six previous laparotomies. One for Cæsarean section, one for acute appendicitis, one for ventral hernia, one for "abscess," and two for intestinal obstruction. Admitted November, 1903. Complained for one month of abdominal pain and slight distention with occasional vomiting. Bowels moved with difficulty. For past six days no movement or flatus. Very tender point to left of umbilicus; continuous vomiting. Temperature, subnormal; pulse, 130 and weak. Ten-inch incision to left of median line. Everything densely adherent. Three points of acute angulation found, one almost completely occluding lumen. Intestine distended above this point, collapse below. Adhesions separated and gut freed. A

long rusty needle found penetrating omentum and transverse colon beneath point of greatest tenderness. Recovery uninterrupted.

Lapeyre, in the French Congress of Surgeons (*Revue de Chir.*, November, 1903, p. 628), reports three patients who had had a number of attacks of appendicitis previously, unoperated upon. All were subsequently operated upon for obstruction, from which one recovered.

Sonnenburg (*Centralblatt für Chir.*, No. 50, 1903, p. 1378) in the proceedings of the Berlin Surgical Society reports ten cases of obstruction. In four cases it followed operations for appendicitis where pus was found, while in six cases obstruction followed operations done in the interval. In none at the time of the second operation for obstruction was there peritonitis present. The mortality is not reported.

Dr. Andrew J. McCosh reports in the "Presbyterian Hospital Reports" three cases of postoperative obstruction. All recovered from the operations for obstruction at his hands, one patient dying six months later, after an operation for obstruction, in a western city.

Dr. John Rogers, Jr., kindly furnishes me with following complicated case: Male, aged nineteen years; operation for appendix abscess September, 1902. After a hearty meal, September 29, 1903, sudden attack of "cramps." The next day he began to vomit, passed some gas, but no feces. The next three days he continued to vomit bilious matter and passed no gas nor feces. Seen by Dr. Rogers on October 3, 1903, for first time, when the only complaint was the vomiting of yellowish-green material. Enemata previously given had resulted in the passing of some foul, fecal-smelling, watery movements. Belly found soft and concave, with no tenderness anywhere. Temperature, 101° F.; pulse, 125. Expectant treatment for two days, in which constipation and vomiting persisted. Operation, October 5, 1903. Median opening. Little or no intestinal distention. Exploration of the appendical region showed a dense fibrous band under which the intestine was tightly constricted. This band started from the ascending colon between it and the ileum, and passed up and back toward the spine, and was about two or three inches long. As it was divided, the upper and inner attachment was found to be the free border of the great omentum. The liberated gut when drawn out showed a transverse line of gangrene about one-quarter of an inch wide. The constricting band was so narrow that it had simply divided the gut transversely like a cord, so that very little trimming of the ends was necessary in order to make an end-to-end union with a Murphy button. The constriction was approximately eighteen inches down from the beginning of the jejunum. Recovery uneventful. Button passed on twenty-fifth day.

The total number of cases reported in this article is eighty-six. Of these fifty-seven recovered after operations for the obstruction, and twenty-nine died, giving 66.3 per cent. of recoveries, and 33.7 per cent. of deaths.

Five cases had more than one attack of postoperative obstruction, viz., Johnson's case (reported New York Surgical Society, April 11, 1900) had three attacks, two operations for obstruction had been required within the year following the original operation for appendicitis, death resulting from a third attempt to relieve an obstruction which had developed in the course of the third year; McWilliams's first case in this article had two attacks with recovery after operations.

Hotchkiss's case had two attacks, the patient dying in the second attack without operation; Brewer's patient had three attacks, with recovery after three operations; McCosh's patient had two attacks, with death after the second operation for obstruction.

From this it is seen that .8 per cent. of those who had survived one attack of obstruction suffered others.

The location of the obstruction was given in fifty of the cases. In every one it was situated in the small intestine. The cause of the obstruction was given in fifty-three cases, and they are as follows: Constrictions by bands in twenty-eight patients, volvuli in ten; kinkings, or angulations, in eleven; and internal hernias in four cases. Gangrenous gut was encountered in five cases, necessitating resection, resulting in three recoveries and two deaths.

A fact to be noted is that obstruction occurred after the interval operation in eight cases. While no attempt was made to tabulate all the cases in the literature occurring in patients who had had no operation for attacks of appendicitis, it may be remarked that in this series there were nine such cases.

The time of the occurrence of the obstruction after the appendicitis, or after the operation for it, is given in fifty-four cases. It may be summarized as follows:

In first week, six cases; in second week, eight cases; in third week, eight cases; in fourth week, three cases; in fifth week, three cases; in sixth week, two cases; in seventh week, one case. From the third month to the twelfth, seven cases; between the first and second years, ten cases; between the second and third years, three cases; between the third and fourth year, one case. One case occurred in the seventh year and one in the eighth year.

In concluding this report of cases, I wish to acknowledge my appreciation of the courtesy and generosity of the various surgeons who have so kindly furnished me with their cases, and to record my thanks to them all, collectively and individually.

It is noteworthy that in the innumerable operations for appendicitis, obstruction occurs so infrequently, and in the future we may expect a still smaller mortality from this complication, due to the earlier recognition of the original disease as well as the early operation for this complication at its inception, before the development of gangrenous bowel or peritonitis.

CONCLUSIONS.

1. The rarity of intestinal obstruction in comparison with the innumerable operations for appendicitis is noteworthy.

2. Obstruction may follow an attack of appendicitis which has not undergone operation. Nine such cases occurred in this series of eighty-six cases, or ten per cent.

3. Obstruction may follow the "interval" operation. Eight cases, or nine per cent., belong to this category.

4. Obstruction is most apt to follow appendicitis with abscess formation. Sixty-nine, or eighty-one per cent., were of this class. Hence the necessity for early operation.

5. Mechanical obstruction may come on within a short time after the appendicitis operation, when the differential diagnosis from that due to peritonitis may present great difficulties. When in doubt, operate, for many patients have undoubtedly died, unoperated upon, with an unrecognized mechanical obstruction (with or without peritonitis) where the erroneous diagnosis was made of simple, uncomplicated peritonitis.

6. Obstruction may occur years after the original attack, or operation (*e.g.*, ten cases occurred in the second year), when it may come on suddenly in perfect health, or preceded by a period with symptoms denoting "partial" (chronic) occlusion, the right interpretation of which symptoms, from a prophylactic standpoint, is of the greatest importance.

7. There may be several attacks of true, mechanical obstruction. In the above series of eighty-six cases, several attacks occurred in five, or .8 per cent., of the fifty-seven patients who survived the first operation for obstruction.

8. Of the eighty-six patients, fifty-seven, or 66.3 per cent., recovered after operations for obstructions. Twenty-nine patients, or 33.7 per cent., died.

9. The small intestine was occluded in all of the fifty cases where it was noted.

10. The cause of the obstruction was given in fifty-three cases as follows: Constrictions by bands in twenty-eight patients; volvuli in ten; kinkings, or angulations, in eleven; and internal hernias in four cases.

11. Gangrenous bowel was encountered in five cases, necessitating resection, resulting in three recoveries and two deaths.

12. We may expect a much smaller death-rate in the future, due to the earlier recognition of the symptoms and their more prompt relief by operation. Fecal vomiting should not be waited for.

13. Prophylaxis consists in operating upon appendicitis before the formation of pus, the use of as little drainage as possible, and the least possible amount of handling of the intestines, at the time of operation.

14. Vigorous abdominal massage with elevation of the hips may avert an impending obstruction. Frequent change in patient's position is likewise recommended.

15. Since the exciting cause is in many cases an attack of acute indigestion, patients should have their diet carefully regulated for from four to six weeks after an attack of appendicitis or after an operation.

50 East Fifty-third Street.

A CASE OF LUDWIG'S ANGINA.[1]

BY C. M. HARRIS, M.D.,
OF PHILADELPHIA.

OUR committee has asked me to report to you some facts relating to a case of Ludwig's angina, which was recently under my care. As the disorder is not common, I have thought best to give you a brief description of it, which I have extracted from standard works on surgery, which, however, devote very little space to the subject.

It is generally defined as a streptococcus infection about the submaxillary gland, and alveolar tissue beneath the mucous membrane of the floor of the mouth and upper portion of the neck. It may arise in a perfectly healthy man after an infectious fever or from trauma. As a result of the infection there is a cellulitis about the submaxillary gland which tends to the formation of a slough rather than pus. This cellulitis is said by one authority to follow the infection of a lymph node over the gland, but as to how this lymph node became infected no explanation is given.

The symptoms are some local discomfort followed in two or four days by swelling and pain. The tongue becomes swollen and painful, opening of the mouth is attended with difficulty. The tissues about the frenum are distended. Pressure causes considerable dysphagia, and there is sometimes great salivation and dyspepsia. Edema of the glottis has occurred with fatal result. In some instances high temperature and symptoms of septicemia or pyemia are present; gangrene is sometimes an accompanying factor.

As to treatment, all authorities recommend early incision, with removal of any gangrenous tissue. This may be followed by applications of carbolic acid. The constitutional treatment is that of septicemia.

As to the case mentioned, it was that of a young man, twenty-two years of age; family history was negative and he had always been generally healthy. On August 25 he went to a public bath and remained in the water for two or three hours. The following day he complained of some pain in the right ear and some swelling in the right submaxillary region. On the second day these symptoms were more pronounced. On the third day I made my first visit and found the patient sitting up, with head inclined backward, face flushed, and with a hard tense swelling in the submaxillary region on the right side and about the base of the tongue. This swelling was unattended by external redness or any apparent heat. The mouth could be partly opened with great difficulty. This revealed a thick coating on the dorsal surface of the tongue and some of the buccal mucous membrane. The anterior portion of the tongue was forced

[1] Read before the Northwest Medical Society, of Philadelphia.

upward, showing edematous swelling about the frenum and floor of the mouth. The orifices of the submaxillary and sublingual glands were quite prominent. The patient stated that the pain was worse than on the preceding two days. The temperature was taken and found to be 100° F. and was not higher at any time during the illness.

On the morning of the fourth day the condition seemed stationary. Twelve hours later the swelling had extended posteriorly beyond the angle of the jaw, and the pain in the ear was almost intolerable. Attempts at aural examination revealed nothing except much swelling of the tissues about the external auditory canal. An opiate was given and the patient passed a comfortable night. The fifth day showed some diminuation of the swelling generally and the tongue began to clear. The ear gave very little pain. By the seventh day the swelling was practically gone, the tongue cleared, and the mouth now capable of being fully opened, presented a nearly normal appearance.

On the ninth day some pus was discharged from the affected ear; the external auditory canal showed considerable swelling and redness, but as my skill as an otologist was quite limited, I have never determined whether the pus was formed in the middle or external ear. After a week the discharge ceased and has not reappeared. Patient has since been in perfect health.

Not being convinced of the necessity of immediate incision in this case, the plan of treatment followed was an expectant one. During the first four days of my attendance one-quarter grain doses of calomel were given hourly for eight to ten hours a day and followed by salines. Desiring to demonstrate the value of a sample package of a quite popular preparation of glycerinated clay, a fresh application of this was made every twelve hours until recovery took place. As previously mentioned, an opiate was given on one occasion to relieve pain in the ear. Subsequent treatment of the aural discharge consisted of syringing with peroxide of hydrogen and an alkaline antiseptic solution.

If we are to give drugs the credit for a cure in this case, I must say I am prejudiced in favor of the calomel, and am inclined to think that lead water and laudanum and ice would have acted quite as well as the glycerinated clay.

I consider the prominent factors in this case to be the obscurity of the cause, and the involvement of the ear and the gratifying result of the conservative treatment. However, owing to certain anatomical and physiological reasons, I have not a doubt that prompt incision would be the safer course in a majority of such cases.

Eye-Strain and Inebriety.—Drunkenness has been added to the already imposing list of maladies which oculists pretend to cure by the relief of eye-strain. The craving for alcohol may be, and often is, a nervous affection, and if the source of the affection is in the eyes, according to the argument of a Chicago oculist at a recent conference in Milwaukee, resort must be had to glasses that cheer and not inebriate.

ENDERMOL, A NEW VEHICLE FOR OINTMENTS.

BY PROF. VIRGIL COBLENTZ, PH.D., PHAR.M., F.C.S., OF NEW YORK.

Endermol, a combination of stearic acid amide and paraffin hydrocarbons, forms an almost white mass of about the consistency of lard, inodorous, of neutral reaction and fusing at 78° to 80° C. The iodine absorption number is 16.98, while that of lard averages about 62, a point in favor of the former as a vehicle for iodine.

When exposed to the air and sunlight under adverse conditions, samples of endermol retained their color, consistency and blandness. When applied to the skin by inunction, endermol forms a smooth, soft, unctuous mass which is readily absorbed. This may be demonstrated comparatively, by applying a little of petrolatum, lanolin and endermol in separate portions, by inunction to the skin and noting the time required for absorption. Furthermore, applications of endermol ointments of iodine (without potassium iodide) and also aconite, were followed by the excretion of iodine in the urine after about five hours in the former, and the characteristic dryness of the throat in the latter.

Rancidity in fats is due to hydrolysis or splitting up of the esters of the fatty acids, with liberation of the free acids. To the presence of these the irritating properties of rancid fats are due. In endermol, consisting chiefly of stearic amide, we have a stable fatty acid derivative which is not decomposed under any conditions through the action of light, air, moisture or such chemicals as are usually employed in ointments.

To demonstrate the adaptability of endermol as a vehicle for ointments, mechanically as well as chemically, such substances as the yellow and red mercuric oxide, yellow and red iodide of mercury, zinc oxide, lead subacetate and carbonete, ichthyol, tar, vegetable extracts and mercury were prepared. All of these yielded smooth, uniform ointments which showed no change whatever upon exposure.

The use of petrolatum, as is well known, is restricted to that of a dressing and this to a limited extent owing to its immiscibility with water, certain chemicals and galenicals.

Lanolin, an excellent vehicle, is objectionable because of its stickiness and toughness and when combined with animal fats (as in lanolin crême), such ointments become rancid and offensive.

There is nothing so objectionable to either the physician or pharmacist as a rancid ointment. While lard or other animal fats may originally have been anhydrous and benzoinated, yet rancidity ensues sooner or later, particularly so when aqueous fluids have been incorporated, as frequently is the case in ointments. Aside from the irritant action, chemical reaction of the liberated fatty acids upon the medicinal agent follows.

Again, lard substitutes consisting of mixtures of suet or tallow or cotton-seed oil stearin, with cotton-seed, sesame or cocoanut oils, are not only open to the same objections, but also the possible

presence of alum, alkalies or water, which render them still less desirable.

Because of its blandness, pliability and freedom from stickiness, endermol is especially adapted as a lubricant for massage treatment, always leaving the skin soft and pliable.

To sum up, the advantages of endermol as an ointment vehicle, are: Absolute freedom from any tendency toward rancidity, although as much as 15 per cent. of water may be incorporated. Ready penetrability and absorption. Pliability, smoothness and fredom from stickiness. Freedom from irritating properties.

A SIMPLE AND ACCURATE METHOD FOR ESTIMATION OF SUGAR IN THE URINE.[1]

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THE usual method employed for the estimation of sugar in the urine by means of Fehling's solution is fraught with considerable difficulty and the results obtained are often far from accurate. The length of time required to make an estimation, the possibility of other substances being present in the urine, besides glucose, which will reduce Fehling's solution at the boiling temperature, the difficulty of definitely determining the end-reaction, and the necessity, in case of error, of repeating the entire process are all factors which tend to make this method inexpedient. It is for this reason that the writer has introduced a more simple and practical method which is scientifically accurate and requires much less time.

The equipment consists of (*a*) a beaker; (*b*) four centrifugal tubes graduated at 2 c.c.; (*c*) a pipette of 2 c.c. capacity, graduated into twentieths c.c.; (*d*) a wire tube-holder to support the tubes when placed in the beaker, and (*e*) a centrifuge (which is not absolutely necessary).[2]

Method of Application.—The beaker one-third filled with water, or enough to cover the graduation mark on the tubes when placed into the beaker, is placed over a Bunsen flame. The centrifugal tubes are filled to the graduation mark (2 c.c.) with standard Fehling's solution, which is made according to the following formula:

1. Copper solution
   - Cupric sulphate..... 34.64 grams.
   - Distilled water..... 500.0 c.c.
2. Alkaline solution
   - Sodium and potas. tartrate... 173.0 grams.
   - Potassium hydrate..... 125.0 grams.
   - Distilled water..... 500.0 c.c.

Mix equal parts of the two solutions.

The tubes are next placed in the tube-holder and transferred into the beaker. They should be numbered 1, 2, 3 and 4 respectively, according to their position in the tube-holder. When the water boils remove the tubes and, by means of the pipette, add the urine in quantities of 1/20 c.c. Begin by adding 4/20 to tube No. 1 and increase the quantity by 1/20 in each successive tube. For example, 4/20 are added to tube No. 1, 5/20 to No. 2, 6/20 to No. 3 and 7/20 to No. 4.

Care must be exercised in adding the urine. In order to measure accurately these small quantities the index finger, which must be dry, is placed over the upper outlet of the pipette to control the discharge of the urine. Before discharging the urine touch the wire of the tube-holder with the tip of the pipette to release the urine which may have collected on the outside of the orifice, then place it in tube No. 1 in such a manner that the tip will touch the side just above the surface of the reagent, and remove by drawing it along the surface of the tube to the top. Proceed in the same manner with the remainder of the tubes. The tubes are next violently shaken in order to thoroughly mix the urine and the reagent, after which they are returned to the beaker and allowed to remain in the boiling water for three minutes. They are then removed and the red cupric oxide is allowed to precipitate by standing, or precipitation is facilitated by centrifugalization. In the latter method due care must be taken that the order of the series of tubes is not disturbed. The color in the tubes is now observed, and if the Fehling's solution in No. 4 is not completely decolorized, 4/20 c.c. of urine is added to each tube, increasing the amounts respectively to 8, 9, 10 and 11-twentieths c.c., again treating them as before. These steps are repeated until complete decolorization is observed. The first tube in the series which is completely decolorized is chosen and 20 divided by the number of twentieths c.c. which have been added to this tube gives the percentage of sugar present.

To illustrate: 2 c.c. Fehling's solution are reduced by .01 grams of sugar; 1 c.c. of urine contains twenty-twentieths (20/20) c.c.

Suppose sixteen-twentieths c.c. of urine reduce 2 c.c. of Fehling's solution, then the number of twentieths c.c. (16) required will have contained .01 grams of sugar.

$$16 : .01 :: 20 : \times$$

$\times = .0125$ (the amount in grams of sugar in 20-twentieths or 1 c.c. of urine.

If 1 c.c. of urine contains .0125 grams of sugar, 100 c.c. contains 1.25 grams or 1.25 per cent.

$$1 : .0125 :: 100 : \times$$

$\times = 1.25$ per cent.

To determine the end-reaction more definitely 1/20 c.c. of urine is added to each tube after sedimentation in such a manner as to form a thin layer on the surface, after which the tubes are returned to the beaker without agitation. A yellow ring of cuprous oxide appears near the surface in those tubes in which reduction is incomplete.

The above method will suffice for all practical purposes. When, however, a scientifically accurate determination is desired the following measures should be added in case less than 10/20 c.c. of urine is used to reduce the Fehling's solution.

[1] From the Clinical Laboratory of the College of Physicians and Surgeons.

[2] This apparatus can be obtained through Eimer & Amend, of New York, who are authorized manufacturers.

After the steps are carried out as directed above the last tube showing incomplete reduction is noted, and the remaining tubes containing a smaller quantity of urine are brought up to the same amount by the further addition. The urine is now diluted with three volumes of water, and after 1/20 c.c., which represents 1/80 c.c. of urine, is added to No. 1, 2/80 to No. 2, etc., proceed with the test as before. The number of eighths c.c. of urine required to complete the reduction are added to the amount already used and the calculation made accordingly. The result will give the exact per cent. of sugar present.

Example.—If the last tube, showing a bluish tint, contains 6/20 c.c. of urine and 3/80 c.c. more are added before the color entirely disappears, the equation is as follows:

$$6/20 + 3/80 + 27/80$$
$$27 : \quad 80 :: \quad .01 : \times$$
$$\times = .0292 +$$
$$1 : .0292 + :: 100 : \times$$
$$\times = 2.92 + \text{ per cent. of sugar.}$$

The following advantages are claimed by the author for this method: (1) The estimation can ordinarily be made in less than ten minutes, which is less than half the time required by the original Fehling's method. (2) With reasonable care the results obtained are decidedly more accurate. (3) By means of the number of tubes, several can be used for control tests; thus one can make two or more determinations at the same time. (4) The solution never reaching the boiling temperature, the possibility of substances appearing in the urine which reduce Fehling's solution at the boiling point, as uric acid, kreatin, kreatinin, nucleoalbumin, etc., is eliminated. (5) The delicacy of the test is not impaired by removing some of the solution for the purpose of determining the end-reaction. (6) In the event too much urine is added to one tube the estimation can be carried out in the other tubes, thereby obviating the necessity of repeating the whole process.

PRESENT-DAY TREATMENT OF TUBERCULOSIS.[1]

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WHEN a diagnosis of tuberculosis has been made the question of treatment at once presents itself, "What shall be done with the patient?" Almost without a dissenting voice, either from physician or laity, comes the answer, "Change climate at once; go to Colorado, Arizona, New Mexico, Southern California, Florida or North Carolina."

Why?

We have here presented the most varied climes, the widest ranges of temperature, the greatest diversity of humidity, and altitudes extending from the sea level to that of the snow-capped mountains in the heart of the continent.

[1] Read before the Iowa State Medical Society, May 20, 1904.

The cases are the same, their circumstances the same and the ability of their advisers the same. Why, then, opinions of so great diversity? It is unusual in the practice of medicine that the experience of one physician is diametrically opposed to that of another of equal ability. Neither is it here. Cases get well in all climates, in all altitudes, in all degrees of humidity and without any regard whatever to the degree of temperature. And, conversely, new cases arise in all climes, in persons who have never changed residence and without any regard to climatic conditions.

A study of the various health resorts States referred to shows the following:

	Altitude.	Barometric Pressure.	Percentage of Sunshine.	Humidity. 8 A.M.	8 P.M.	Mean.	Temperature. Spring.	Summer.	Fall.	Winter.	Average.
Asheville	2,250	....	65	..	..	76	54	71	55	38	55
Denver	5,291	24.72	72	61	39	50	47	69	50	31	49
Jacksonville	43	30.03	59	85	77	81	68	81	70	56	69
Los Angeles	338	29.62	73	78	64	71	50	68	63	54	61
Phoenix	1,108	28.75	84	50	24	37	67	87	69	52	69
Santa Fé	7,013	23.27	77	57	36	46	47	66	49	31	48
Des Moines	861	29.11	59	80	65	72	48	72	50	23	48

The above data have been kindly furnished me by Dr. Geo. M. Chappel, director of the Iowa Weather Service.

Since each of these widely differing climates shows results in a certain percentage of recoveries, and none of them excels to any appreciable extent over others, it is evident that neither temperature, humidity, elevation, atmospheric pressure or percentage of sunshine is the factor to which the favorable change may be accredited.

There is no marked difference in the number of recoveries, whether in Norway, the British Isles, in Germany, France or Italy. Crossing to our own side of the Atlantic we find like results in Massachusetts near the sea level, in the Adirondacks of New York, in Pennsylvania, in the Valley of the Mississippi, in the Rocky Mountain region and in the great Southwest. Equally good results are obtained on the mountain-top or at the sea level, in the dry and arid regions, or on board a vessel in the open sea. As between the invigorating breezes of the North and the depressing heat of the South the former are much to be preferred. In New York or Massachusetts, in Wisconsin or in Iowa patients under proper supervision will do infinitely better, and more of them will get well than if they seek some fabled clime in some far-off land.

The benefits to be derived from a change of climate are nothing to be compared to the hardships sustained, to the wide separation from home and friends and the weary waitings for the return to health. All writers agree that this is not a question of months, but of years, and more recently it is affirmed that the change must be a permanent one. As a result of the extravagant claims of climatologists, some of the sections named have been flooded with poor consumptives, many too sick to be on their feet, with money

gone and friends thousands of miles away. Even for those with means and in fair physical condition it is daily becoming more difficult to find suitable shelter. Few doors are open to them. In Denver and in many other places I find that children, dogs and consumptives are classed together as undesirable tenants. California proposes legislation to keep the consumptive out. In all the sections noted, except possibly Asheville, N. C., there is not a single sanatorium of any size that is open to these patients.

Such a place was promised at Idyllwild, in Southern California, but it has become a pleasure resort, and consumptives are no longer admitted. There are a few tent colonies and some small private institutions, but nothing worthy of comparison with the sanatoria in New England and in the Eastern States, sections not noted for their climatic conditions. None of these health resort States are prepared to care properly for the tuberculous patient, and it is little short of homicide to send him where no preparation has been made for his reception. There is so little in specific climate that it may practically be ignored without detriment to the patient. Were figures necessary to confirm this statement they might be found in your own case records. Of all those sent but few are now alive.

In referring patients to any climate the order is simply, "Go." Not a word of what to do or how to live, of life in the open air all the time, of special diet and forced feeding, of rest and constant medical supervision. All this is left to the patient's own sweet will. And the consumptive patient has no will. Tuberculosis is to a marked degree a species of insanity—insanity in the sense that the mind of such a patient is no longer a normal mind. The toxins secreted so affect the delicate mechanism which has for its function the transformation of the material cell into the intangible and immaterial thing which we call "mind" that the normal flow of cerebration is interrupted, and the patient is controlled by moods and spells that do not characterize his actual self. Yet this patient, sick both in body and in mind, is given rein to drift with every passing whim in any direction that resistance does not present. Little wonder is it indeed that he falls a prey to all the fakes and charlatanry of the day, that all the nostrums are tried and all the cures are taken!

It is unquestioned by all who are qualified to express an opinion, that the physician who advises a change of climate for the cure of tuberculosis does his patient a grave injustice, he reveals his inacquaintance with the modern treatment of the disease and stands at least half a decade behind the onward progress of the profession in which he is enrolled.

Climate in tuberculosis is a will-o'-the-wisp, it is the end of the rainbow with its pot of gold. It is ever just a little beyond. It rests in Colorado, New Mexico, Arizona, California. Like children in their simple faith chasing the rainbow's vanishing end and delving for treasures where once it stood, our patient pursues his phantom till worn and wasted, weary but hopeful still, he falls asleep and wakes to learn that the magic end of the bow of promise rests upon the mystic shores of the spirit land.

It has repeatedly been shown that cure is seldom effected by climate to such an extent that the patient may return to his former home. That is, one cured in Colorado or California must remain in the climate where improvement was effected. All practitioners have noted this fact, and all phthisiologists assert its importance. These patients must be treated as near to their places of residence as may be possible, and fortunately, even the best climate is of secondary importance to methods at our command which are readily obtainable in any suitable locality. In other words, it is everywhere conceded by those in position to know best, that patients sent afar from home to some climatic resort are leaving conditions better suited to their recovery and, with all the added hardships, are not receiving the benefits that might be found near home.

The exaggerated claims for climate in the past have been reduced to the single one that that climate is best which permits the greatest number of hours to be passed in the open air.

In all tuberculosis sanatoria, both in Europe and America, no matter where located, it is found entirely practical to keep patients in the open air not less than twenty hours out of the twenty-four. This is likewise true for Iowa. Little inconvenience is found in the open air method, both day and night, except on the very few days when the mercury ranges far below zero.

The excessively cold weather of January and February of this year will be remembered. For an entire month the mercury scarcely rose to the zero point, while the frost penetrated to a depth of six feet or more into the ground. Yet during all this period, with the exception of a very few days when the lowest points were touched, every patient at Fort Dodge was in the open air both day and night, except at meal times. Not only this, but the patients were perfectly comfortable and contented. Nor do these conditions apply to Iowa alone; they are known to be true for all that vast region extending from Maine to Iowa, and it is difficult to conceive a climate that will permit a greater number of hours to be passed in the open air.

The open-air method may be variously applied during the winter months in our northern climate. Trudeau and Loomis Sanatorium place their patients on open porches well protected from the winds. Many institutions abroad adopt the same measures.

We have found it very convenient to practically convert the patient's room into an open porch by throwing the windows, which are of large dimensions, wide open, while on the opposite side of each room ventilating shafts pass upward through the roof. The patients are kept comfortable by means of clothing, robes, caps, foot-warmers, etc.

So important is the correct expression of the present professional opinion upon this question

that I quote some of the best authorities. Trudeau says: "When I went to the Adirondacks in 1873 the medical profession took little interest in the disease known as consumption, there was no recognized treatment for it except change of climate, and patients were sent principally to warm climates in a desultory sort of way, because they coughed, and nothing that could be done for them at home was of any avail.

"Each medical authority held differing and often very decided views as to the relative advantages of various climates; some advising warmth and equability, others laying special stress on dryness or elevation. Nevertheless little by little it became evident that the great majority of consumptives died wherever they went, and the few recoveries that took place occurred in regions which differed widely as to elevation, temperature and dryness, and that as many patients recovered in the intense cold and storms of the high Alps and other mountains as in the warm, equable temperature and dryness of atmosphere to be found in such countries as Egypt and the south of France, while cures were reported from time to time in patients who had gone on long sea voyages or remained in indifferent climates where none of the conditions considered essential existed.

"Wherever the consumptive was sent by his physician, little or no stress was laid upon regulating the habits of his daily life, beyond a recommendation to live out-of-doors and to exercise as much as possible, while for medication cod-liver oil and, later, creosote were generally prescribed."

I regret to say that in Iowa, as far as this question is concerned, a very large percentage of physicians are still living in the year A.D. 1873.

Knopf says: "There is still a vast diversity of opinion as to the respective merits of what are still sometimes called "specific climates" for consumptives; but the number of phthisio-therapeutists who consider even the best and most suitable climate of secondary importance, and the hygienic and dietetic treatment, preferably in a closed establishment, or under constant medical supervision in congenial surroundings, the all-important factor, is constantly increasing."

Hillier, a well-known English authority, says: "Ocean voyages, high altitudes and dry climates have all been eulogized in turn as remedies for phthisis. I have had phthisical patients under my care and observation for considerable periods of time under all these conditions, and the conclusion I have come to is that the benefit derived in every case is chiefly dependent on the extent to which the patient is constantly kept in pure air."

As long ago as 1897 an Iowa physician, after spending several years in Southern California, New Mexico and Arizona, said: "One hundred men buy lottery tickets, one receives a prize. The ninety-nine have not only received blanks, but they have sustained heavy losses. The successful one's name is heralded to the world and soon all know of his gain. The ninety-nine welcome seclusion. A few itinerant consumptives are perhaps to-day enjoying recovered strength and health, while thousands have sacrificed their only chance of recovery in their mad search in many climes for that which they might have found at home, if their wisdom had been as ardent as their zeal."

Medicines.—The medical history of a case of tuberculosis usually is: (1) A course of patent medicines prescribed by himself, the druggist, or by the patient's friends. (2) A course of medicine under the physician, consisting of creosote, guaiacol, cod-lived oil, maltine, tonics, etc. (3) A course of tuberculin, lymph, copper, or other specific for revenue only. It is difficult to say which of these courses is most harmful to the patient. All lull him into an unsuspecting belief that something is being done, and that he is getting better, while daily his chances for recovery are slipping away from him.

While it is certain that no medicine or lymph or other substance has any known value whatever on the tuberculous process, drugs have a legitimate place in this disease. Intercurrent symptoms arise and occasionally call for treatment. If the cough is excessive, night-sweats severe, diarrhea exhausting, or other like troubles arise, remedies suitable for their relief are indicated. But that permanent relief may come from drugs is an error no less grave than that the principles of Christian Science applied might be fraught with results for good. Time is lost in any attempt to treat these cases with medicines, and time is the essential factor which determines the chances of recovery in this disease.

In this connection I quote from the report of "The Tuberculosis Committee of the Charity Organization Society of the City of New York," a committee composed of many of the best phthisiologists in this country. It says:

"*Resolved*, That a public announcement be made that it is the unanimous opinion of the members of this committee that there exists no specific medicine for the treatment of pulmonary tuberculosis, and that no cure can be expected from any kind of medicine or method except the regularly accepted treatment, which relies mainly upon pure air and nourishing food."

What then shall we do with the consumptive patient?

First, we must recognize him much earlier than has been done by many in the past. It is not unusual to see these patients in almost their final stages without a diagnosis having been made. Practically all such cases die, no matter where they go or what they do. It is exceedingly important that they be recognized in their incipient stages. Time must not be lost in their treatment with medicines. These do no good, while each day the patient approaches nearer to that point when recovery is impossible.

Of all the factors in the treatment of tuberculosis fresh air and sunshine stand first. Trudeau puts it, fresh air and sunshine 50 per cent., nutritious diet 25 per cent., rest 25 per cent.

Medical supervision, constant, painstaking, and with the firmness of military discipline, is necessary to carry out the conditions essential to the proper treatment of this disease. This may be found only in the modern sanatorium for tuberculosis, a full discussion of which time will not now permit.

MEDICAL PROGRESS.

SURGERY.

Ascaridiasis of the Liver and Pancreas.—About one year ago post-mortem observation confirmed the diagnosis of a case of ascaridiasis of the biliary passages and the liver, as well as of the duct of Wirsung and the pancreas, made by O. VIERORDT (*Samml. klinisch. Vorträge*, June, 1904). This was the first instance in which this condition had been diagnosed. The case was that of a two-year-old child, in whom the family and past history had been negative. During the summer the child appeared ill, without any special symptoms except a slight jaundice. After several days of apparent malaise, in the latter part of September, while at the table he began to vomit. The material brought up contained three worms. Following this was a fever of 101.3° to 102.2° F. of three days' duration. After a course of santonin he passed, two days later, per anum, 64 worms, and every day thereafter from 12 to 15 worms. The vomiting occurred on September 27, and three days later there occurred severe abdominal pains. For eight to ten days there was cough, marked emaciation, weakness and complete anorexia. There was absence of fever from the end of September until October 20, when it reappeared. There were four to five daily stools, pulpy, frequently green and slimy. On admission to the hospital on October 22 the child was quite sick. The abdomen was slightly swollen, and the hypochondriac region was tender on pressure. The lower border of the liver in the mammillary line was two finger-breadths below the free border of the ribs. The upper border of the liver was normal and the spleen not distinctly enlarged. The urine showed a faintly positive iron-chloride reaction, and contained neither aceton, albumin nor sugar. There was no leucocytosis or eosinophilia. Examination of the worms passed showed them to be of the genus and species *Ascaris lumbricoides*. A presumptive diagnosis of ascaridiasis of the liver was made. The course of the disease was as follows: A remittent and intermittent fever, with apices at 104° F., without chills or noticeable sweating, and with a gradual fall; considerable pain in the upper part of the abdomen and great restlessness. On October 26, examination of the urine showed a trace of albumin. For two weeks the clinical picture did not change. The right lobe of the liver was distinctly enlarged, hard, sensitive and with a sharp inferior border. A tumor-like enlargement of the edge of the left lobe was indistinctly made out. Under narcosis the spleen was quite palpable. At times, in the left hypochondrium, between the umbilicus and the upper border of the spleen, there was detected a tumor, not sharply circumscribed, round and movable on pressure and then completely disappearing. Worms appeared daily in the stools. The entire clinical picture bespoke with greatest probability ascaris-abscesses of the liver, as well as ascaridiasis of the biliary passages. The movable tumor in the left hypochondrium suggested an ascaris-abscess of the tail of the pancreas. The failure of anthelmintic remedies and the progressive decline, together with the multiplicity of abscesses, made a surgical operation imperative. An incision 7 cm. long was made one finger's-breadth below the free border of the ribs. The upper surface of the liver presented two furuncle-like prominences. The under surface of the left lobe presented a soft, fluctuating spot. The liver was sewed to the edges of the wound. Three days later a second operation was performed and provisional punctures of the liver made. The result of the latter brought only blood, no pus or worms. No further operative procedures were performed. At no time did jaundice appear. Death occurred on November 20 from exhaustion. The autopsy revealed ascarides in the intestine, esophagus and larynx (in the latter probably post-mortal), in the ductus choledochus and in the hepatic ducts, which were enormously dilated and occluded with worms; in the intrahepatic biliary passages, which were also dilated and surrounded by necrotic liver-substance, containing partly a necrotic, pulpy mass, and partly worms. The same conditions prevailed in the pancreas.

Hemoglobin Estimation with Tallqvist Scale.—D. ZUR VERTH and D. SCHUMACHER (*Münch. med. Woch.*, July 26, 1904) have used the Tallqvist scale in all their cases and have controlled the results with the Fleischl instrument. In a hundred cases differences up to 15 per cent. were noticed five times; 10 per cent., 34 times; 5 per cent., 42 times., and no difference, 19 times. The estimation was too high or too low in an equal number. The greatest variation was always noted with blood rich in hemoglobin; in anemia, where the accurate estimation is of most value, fairly constant figures were obtained. The scale is therefore highly recommended in office practice.

Treatment of Post-operative Peritonitis.—In considering instances of peritonitis which develop after operation, E. H. GRANDIN (*Am. Jour. Obst.*, July, 1904) differentiates three types: the *paretic, inflammatory* and *septic*. The first class consists of cases in which, after abdominal section, there is a gradual development of tympanites, the stomach rejects food and drugs, and there is an elevation of pulse and temperature. The treatment recommended is full hypodermic doses of atropine or hyoscine hydrobromate to relax the spasm of the bowel. The *inflammatory* type is characterized by a concomitant rise of temperature, pulse and respiration, three to four days after operation. The bowels may or may not respond, the stomach is usually intolerant to food and medication. Such conditions call for rest, an ice-bag should be placed on the abdomen, the stomach washed out and food administered by rectum. To give rest to the inflamed peritoneal surfaces, codeine is the best drug since it does not paralyze peristalsis or upset the stomach. The *septic* form is characterized by rapid pulse and respiration and *low* temperature. The belly may or may not be tympanitic, the kidneys are inclined to be torpid, the stomach apt to be intolerant and the bowels loose. In this condition a generalized toxemia must be dealt with and a sustaining treatment instituted by the discriminating use of alcohol, strychnine and digitalis. Pus should always be attacked under the recognized rules of surgery.

MEDICINE.

Embolism and Thrombosis of the Mesenteric Vessels.—The typical symptoms of embolism of the superior mesenteric vessels are sudden, very severe, colicky pains in the abdomen, fall of temperature, intestinal hemorrhage, tympanites and exudation into the peritoneal cavity, with signs of peritonitis. K. OSSWALD (*Deutsch. Zeitsch. f. klin. Med.*, Vol. 53) points out, however, that hemorrhages are frequently absent, and that all the

symptoms may point to a paralytic ileus. The cause of the vascular obstruction is usually an embolus in the pulmonary veins, the left heart or the aorta, owing to endocarditis, atheroma or aneurism, but occasionally there is only a local thrombus. The presence of other emboli forms a valuable guide for diagnosis. In the presence of intestinal hemorrhage one must rule out ulcers and portal obstruction, such as occurs in cirrhosis, hepatic syphilis, old adhesions about the porta hepatis, cachexia and marasmus. Where there is intestinal obstruction the differential diagnosis must consider volvulus, invagination and acute peritonitis. The clinical symptoms of embolism of the artery and thrombosis of the vein are exactly alike; the latter condition may be secondary from portal thrombosis, or primary and ascending from the intestines; enteritis, with or without fever, may precede, and varices and hemorrhoids are often present. In the author's case the patient lived only four hours after the artery became obstructed, and at autopsy the vein was also found thrombosed. The cause of the embolus was atheroma of the aorta, of the thrombosis, an enteritis, aided by the arterial occlusion. In a second case the course was more protracted, since many of the smaller peripheral vessels had become obstructed. In treating cases of embolism it is very difficult to decide if an operation is indicated or if the heart's action should be stimulated. The author believes that medical treatment alone should be resorted to as long as there is no intestinal obstruction, but with the latter, an operation alone will save the patient. In doubtful cases, surgical interference should also be considered.

Rare Complications of Dysentery.—The complications of dysentery differ with the two forms, amebic and bacillary. In the former liver abscess is most frequent and perforative peritonitis, profuse intestinal hemorrhage, stenosis of the intestines, pulmonary or cerebral abscess and paraplegia may occur, while in the latter the most frequent complications are inflammation of the joints, tendon-sheaths and serous membranes, and, rarely, parotitis. A patient under the care of B. MARKWALD (*Deutsch. Zeitsch. f. klin. Med.*, Vol. 53) was suffering from the bacillary form and developed a urethritis and double conjunctivitis, with severe iridocyclitis, during the course of his disease. The former manifested itself in pain along the canal, with swollen orifice and slight mucoid secretion. In both secretion of the urethra and the conjunctivæ, bacilli were found, and the patient's blood strongly agglutinated the Shiga type.

Menstrual Jaundice.—A patient under the observation of L. METZGER (*Zeitsch. f. klin. Med.*, Vol. 53) presented all the symptoms of severe liver disease. An operation was postponed, since she was menstruating, and when seen a few days later, the jaundice and other symptoms had disappeared completely. With every menstruation, however, the attack was repeated, so that a close relation between the two could not be denied. The author believes that in some individuals, menstruation is accompanied by a contraction of the biliary passages, which permits the bile to pass into the lymphatics instead of the gall-bladder.

Polymyositis.—The patient observed by W. STRENG (*Zeitsch. f. klin. Med.*, Vol. 53) suffered from severe pains in the muscles of the extremities, with tenderness, a dry dermatitis, edema of the eyelids and of the arms and swelling of the mucous membrane of the mouth. The patient was first treated for rheumatism, but when the inflammation became worse and extended to nearly every muscle of the body, a piece was excised for microscopical examination. The muscle fibers were almost entirely destroyed, and the interstitial connective tissue presented a marked proliferation of round cells. The patient soon developed paralysis of the muscles of deglutition and died of pneumonia. At autopsy almost all the muscles, including the diaphragm, were affected. Not all cases are fatal; indeed, the author believes that many patients are wrongly treated for muscular rheumatism.

Theocin Poisoning.—Theocin has such pronounced diuretic properties, that it is coming more and more into favor, especially in cardiac cases with edema. In a series of cases, E. ALLARD (*Deutsch. Arch. f. klin. Med.*, Vol. 80, Nos. 5 and 6) has, however, observed very severe epileptiform convulsions which were directly responsible for death. At autopsy, the mucous membrane of the stomach was ulcerated and infiltrated with blood, though the dose employed had not been excessive. Experiments with animals then convinced the author that lesions of the stomach are a common consequence of medicinal doses, hence great caution should be exercised. Many of the organs also gave evidence of cloudy swelling.

Fibrinous Bronchitis.—In order to determine the nature of the coagula coughed up in fibrinous bronchitis, the chemical analysis gives better results than the microscopical, but where insufficient material is at hand, it should always be hardened and stained. G. LIEBERMEISTER (*Deutsch. Arch. f. klin. Med.*, Vol. 80, Nos. 5 and 6) uses the thionin and mucicarmine stains to identify mucus, and Kockel's method for fibrin, since Weigert's is less liable where both fibrin and mucous are together. In the majority of cases of fibrinous bronchitis examined, the clots consisted chiefly of fibrin, but in 7 out of 13, mucin was also present. Curshmann's spirals were only found once, and the hunt for Charcot-Leyden crystals and eosinophile cells was always negative.

Cheyne-Stokes Breathing in Diabetes.—A characteristic large type of breathing has been described as typical for diabetes mellitus, and sometimes it is possible to diagnose the approach of coma, since this breathing may precede the latter for several hours, though the subjective complaints of the patients may be slight. W. EBSTEIN (*Deutsch. Arch. f. klin. Med.*, Vol. 50, Nos. 5 and 6) cites several cases where the coma was not accompanied by Kussmaul's breathing, but by a typical Cheyne-Stokes or an irregular type. He has also seen cases of chronic nephritis with the diabetic type of respiration, and argues that both forms are closely allied and probably have the same physiological cause.

Bence-Jones Albuminuria.—According to the latest views, Bence-Jones bodies occur in the urine exclusively in multiple tumors of the skeleton. They need not necessarily be myelomata, but may belong to the class of sarcomata, lymphosarcomata, chondrosarcomata or endotheliomata. A few cases are on record where a clinical diagnosis of the osteomalacia was made, but a microscopical examination always disclosed a tumor. F. VOIT and H. SALVEND (*Münch. med. Woch.*, July 19, 1904) describe in detail the urinary examination of their patient, who gave no symptoms of bone-affection. The urine was atypical in that a precipitate only formed on cooling a sample that had been boiled with acetic acid. On again heating, the precipitate dissolved, to reprecipitate on cooling. A quantitative estimation was possible after the addition of acetate of iron, ammonium sulphate or alcohol. The freshly-precipitated body was readily soluble in water, but lost this property if permitted to stand under alcohol for some time. The urine was also peculiar in that it showed very little tendency to decompose, but after three or four days the albumin began to separate out. The solubility and precipitation can be modified considerably by altering the proportion of salts

in the urine or by adding acid. Frequently another proteid accompanies the Bence-Jones albumin, which seems to belong more to the globulins. The origin of these bodies is still obscure; it is not likely that they are formed within the tumors themselves, as they are often excreted in too large amounts. By giving the patients more albumin, a larger quantity will also appear in the urine, hence the tumor-cells probably in some way attack and modify the circulating proteid. Another interesting contribution to the subject of bone-tumors is contained in the article of S. JELLINEK (*Virchow's Archiv*, Vol. 177, No. 1). Although the patient has sustained many pathological fractures during life, and his skeleton was literally riddled with tumors, Bence-Jones bodies could never be found in the urine. Microscopically the tumors were myelomata.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Reaction of Protoplasms of Chemotaxis.—This paper is the eighty-sixth report of the Scientific Grants Committee of the British Medical Association. It is interesting to note that presumably on account of the activity of the antivivisection powers in England, the research student J. O. WAKELIN BARRATT publishes as a report (*Brit. Med. Jour.*, June 18, 1904) from the physiological Institute at Göttingen. His summary is as follows: (1) Exposure of *Paramœcia* to acids or alkalies of concentration sufficient to kill in twenty to thirty minutes does not affect the staining reaction of the organisms; (2) prolonged exposure of *Paramœcia* to acids or alkalies of higher concentration causes the well known appearance of "accentuation of basic and acid staining," respectively, but this is a change affecting the protoplasm after death, and therefore of a different order from that occurring in relation to chemiotactic phenomena; (3) *Paramœcia* killed by the constant current resemble *Paramœcia* killed by acids and alkalies of minimum lethal concentration in respect of the absence of any alteration of staining reaction; (4) the chemical reaction of the protoplasm of *Paramœcia* cannot be determined by means of indicators in respect of a concentration of H plus and OH minus ions, which is less than 0.001 N. Within this limit, the protoplasm, living or dead, gives no evidence of acid or alkaline reaction; (5) the protoplasm of *Paramœcia* killed by mineral acids or by alkalies of low concentration gives no evidence of acid or alkaline reaction with methylorange or phenolphthalein; (6) *Paramœcia* killed by the constant current do not exhibit any acid or alkaline reaction.

Infective Element in Gout.—Those who suffer most keenly from certain diseases are not always the most patient and successful observers of the lesion. This is not the case with the English in their studies of gout. CHALMERS WATSON (*Brit. Med. Jour.*, July 16, 1904) presents a series of remarkably interesting microphotographs which illustrate many points on the pathology of gouty tissues. They support the views of Garrod, who, discussing the occurrence of fat in the bone-marrow of gouty individuals, states:

"Although I have not quantitatively determined the amount of fat in the bones of patients who have died from aggravated forms of gout, I am convinced that it often exists in large quantities; whether this is related to the disease or is dependent on imperfect nutrition is not known. It has been held by Ebstein that bone-marrow took an essential part in the development of primary gout—his belief being that the marrow is a site of production of uric acid. The author agrees with Ebstein in his views on the important part played by the bone-marrow in gout, but he goes further in suggesting that it is of no greater importance than the bone-marrow in all infectious diseases. The clinical picture of acute gout is, typically, that of an acute infection; the onset, the chart, the local conditions, the relapses all suggest it. Furthermore the white cells undergo a striking and remarkable change. The interpretation of this change is not clear, but it suggests to the author the existence of infection. Furthermore, the study of gout from a comparative standpoint—it is often seen in fowls—affords ground for a similar belief.

Observations in Sarcoma.—Carefully recorded clinical studies have advanced the subject of sarcoma fully as much, if not more, than laboratory observations. ANDREW J. MCCOSH (*Annals of Surgery*, August, 1904) presents his records of 125 cases of sarcoma. In each one the diagnosis was verified by pathological microscopical study. Twenty-seven of the total number were lost sight of, leaving 98. These were all studied in greater or less detail. Perhaps the most interesting result arrived at by the author is that the greatest number of cases occurred between the ages of thirty and forty years. This, as he says, is by no means in accord with the prevailing idea that sarcoma develops mainly in young adults. He concludes, then, that scarcomata develop in adult life rather than in adolescence.

As to sex, the author's tables show them to be very evenly divided. Of the 98 under observation, 51 have died of metastasis or recurrence, a little over 50 per cent. McCosh discusses the frequency with which a myoma is transformed into a sarcoma, and concludes that this direct metaplasia of the smooth muscle cells into sarcomatous cells is generally recognized.

The average duration of life of the 51 operated patients, who subsequently died, was twenty-five months, the maximum being ninety-six months and the minimum four months. Of the remainder, some are in process of dying, while others are too recently operated on to be counted. This leaves, of the 98 patients, but 39 who have survived the operation for one year or longer. Of the 98 patients, in 56 the operation was complete. Of the remaining 42 incomplete sections one resulted in a cure. Of the 56 complete operations, 14 patients have died of recurrence or metastasis. Of nine lymphosarcomata operated upon, all died—this agreeing with the results of other surgeons. In discussing sarcomata of the lower extremity, McCosh dwells interestingly on Mikulicz's protestation that encapsulated grant-cell sarcomata should be resected instead of amputating the extremity. He holds that while many good results have sprung from resection, he has never seen a case whose interests could be best served by resection. He further discusses the question of amputation and disarticulation, and states that in his opinion the lesser operation is "often preferable and equally safe."

PHYSIOLOGY.

Influence of Ligation of the Extremities on Blood-pressure.—The tying-off of extremities so that the return flow of venous blood is interfered with while the arteries are not compressed, is a procedure which has been employed in pulmonary hemorrhage, since less blood is in circulation, and the general arterial pressure will fall. Esmarch's method is the converse of this; it consists of forcing out the blood of the extremities into the general circulation, and has been used after severe puerperal hemorrhages, though it may be followed by gangrene or pulmonary embolism. W. PLASKUDA (*Deutsch. Arch. f. klin. Med.*, Vol. 80, Nos. 5 and 6) finds that by tying off the extremities by means of a rubber bandage, three-fourths to five-fourths of a liter of blood can be abstracted from the head or trunk. Stasis

in three extremities will diminish the blood-pressure 20 millimeters of mercury (about 14 per cent.). In nervous individuals this is not, however, so constant. Occasionally there will be a sudden drop, with symptoms of collapse, which disappear rapidly if the bandage is removed. If the blood is forced out of the extremities the pressure will rise, but this depends more on nervous than mechanical influences.

The Nature of Chemical and Electrical Stimulation.—Those who are interested in rational pharmacology will find much that is valuable in recent physiological researches in the nature of stimulation. A. P. Matthews (*Am. Jour. of Physiol.*, August 1, 1904), who has done considerable work in the investigation of the relation between ions and physiological phenomena, has conducted a research, the result of which shows that the physiological action of an ion depends upon its electrical state and its electrical stability. He based his experiments upon the well-known fact that the chemical properties of an element vary with its electrical state; thus, iodine in sodium iodide has different chemical properties from iodine itself; nascent (negative) hydrogen reduces, while positive hydrogen oxidizes. Since the chemical nature of a substance depends upon its electrical condition, the conclusion is drawn that its physiological or pharmacological action will also depend on the same factor. As evidence of the truth of this conclusion the following examples are cited: Ferric salts are poisonous to *Fundulus* embryos in concentration, while ferrous salts require a concentration of to kill in the same time, the difference between these salts being the electrical state of the iron. The author's paper adduces further proof of the above proposition and also the fact that not only do the atoms change their actions with their electrical state, but that they act by means of their electrical condition or their electrical charges; and that positively and negatively charged ions have opposite actions. All ions of the same sign act alike, differing in the degree of their action, because the ease with which they change their electrical condition, or give up their charges, varies. This latter factor is measured by the solution tension. The facts of chemical stimulation are summarized as follows: Nearly all electrolytes and non-electrolytes will stimulate the sciatic nerve of the frog in solutions having an osmotic pressure of about 14 atmospheres. This stimulation is not due to the electrical condition of the solution, since it is common to electrolytes as well as to non-electrolytes. It is not due wholly to the extraction of water increasing the concentration of salts in the outside of the nerve and setting up thereby a concentration chain, since the non-electrolytes stimulate nearly or quite as powerfully in such solutions as the electrolytes. This stimulation is probably due to the extraction of water setting up a definite change in the colloids of the nerve rendering the protoplasmic hydrosol unstable. Many electrolytes stimulate in solutions which are so dilute as not to extract water. This stimulation is due to the electrical condition of the solution. All anions have a stimulating action; all cations, a depressing action. This is shown by the facts adduced, as well as by the well-known phenomena of electrical stimulation, in which the opposite electrodes have opposite actions. The ions are minute, freely moving electrodes of different voltages. The physiological action of any ion depends (1) in its concentration; (2) on the sign of its electrical charge; (3) on its electrical stability or ionic potential. Its action is also modified by its velocity and weight; the faster it moves, the more powerful it is; the heavier it is, the less powerful. Physiological action is hence dependent upon the electrical state and stability of the ion and is independent of chemical composition, except as the chemical composition may influence its velocity and weight. Whether any salt stimulates or depresses, depends upon the relative efficiency of its anion and cation. If the anion markedly predominates, as in hydrates, the salt stimulates; if the cation predominates, the salt depresses. Chemical stimulation is thus shown to be electrical and dependent upon the electrical charges of the ions. Electrical stimulation is produced by modifying the distribution of ions in the nerve and thus altering their concentration.

OBSTETRICS AND GYNECOLOGY.

Etiology of Kraurosis Vulvæ.—Certain histological conditions, which are apparently characteristic for this disease, are described by P. Jung (*Zeitsch. f. Geb. und Gyn.*, Vol. 52, No. 1). These consist of infiltration of small cells, hyperemia, edema, loss of elastic fibers and partial sclerosis of the connective tissue of the corium. In some of these cases there was no symptom of kraurosis and macroscopically no contraction or discoloration of the tissues could be detected. The histological difference between a well-marked case of kraurosis and a chronic vulvitis, is not qualitative, but quantitative, and for this reason the author claims that the disease can no longer be looked upon as an entity, but must be considered as the terminal stage of a chronic vulvitis. The causes which underlie these conditions are: pruritus, chronic vaginal discharge of a specific or non-specific character, diabetes, syphilis, masturbation and neoplasms.

Determination of the Length of Pregnancy.—The many efforts which have been made to determine in advance the day on which the pregnancy in any given case will be terminated and labor begin, have never as yet resulted in anything which can be considered of practical value. F. Schatz (*Archiv f. Gyn.*, Vol. 72), has made a special study of this subject and believes that one of the most reliable means is afforded by the periodically recurring pains. In many instances, however, these are not felt and therefore pass unnoticed, but as a substitute the changes in arterial pressure, which run parallel with the menstrual periods, may be observed. The pains generally correspond in their rhythm with the periodic minimum and maximum of the blood pressure. When the maximum blood pressure and the period uterine contractions correspond, the day of expected labor may be quite definitely ascertained. This correspondence also explains what are often designated as early or late births. The number of months remains the same but their individual length varies and this causes an apparent variation in the length of the pregnancy. The author believes that the physiological month exists in reality, and not only in the form of the menstrual period, but is also marked by the recurring pains in pregnancy. It is marked by the variations in arterial pressure and also in other bodily functions.

Primary Hydatid of the Fallopian Tube.—The female pelvic organs are but rarely the localities chosen for the deposition and development of the ova of the *Tænia echinococcus*. They not uncommonly become involved in extensive hydatid growth development in the liver or other abdominal organs, but they are rarely the localities primarily affected. The ovary and the Fallopian tubes are among the last sites in the whole body selected by these parasites. So, for this reason, T. W. Eden (*Brit. Jour. of Obst.*, July, 1904), reports the following case: Mrs. E., aged forty years, was admitted to the Chelsea Hospital, London, complaining of pain in small of back and in the left side. Menstruation was regular but accompanied by pain during the whole period, in the hypogastric and sacral regions. She had

never been pregnant. Local examination showed a small, tense cyst in the pouch of Douglas, firmly adherent to the surrounding structures and connected by an easily palpated pedicle with the right cornua of the uterus. Dermoid cyst of the right ovary was the diagnosis. During the operation for its removal the cyst ruptured revealing the easily recognizable hydatid vesicles accompanied by lose membrane and a small amount of thin fluid. The tumor mass was carefully removed. No other masses could be discovered in the abdomen and the remaining viscera seemed to be free from hydatid disease. The Fallopian tube measured four inches from the divided end to the abdominal ostium. The inner third was not altered. With the upper border of the outer two-thirds was closely incorporated a cyst of considerable size; the tubal canal was intact, running apparently in the lower wall of the cyst. There was no communication whatever between the tubal canal and the cavity of the cyst. The cyst measured 4½ inches in vertical, 3 inches in transverse, and 2½ inches in anteroposterior diameter. It contained but a single cavity, the inner wall being smooth and polished, the hydatid membrane having been completely detached. The examination of the fluid showed large numbers of typical brood corpuscles, and free hooklets. The patient had lived all her life in London and had never kept a pet dog or cat or any other animal. The ova must have been taken in with some article of food.

The Electrothermic Angiotribe.—The idea of the angiotribe was originally suggested by Baker Brown in 1862. He, however, depended more on the element of heat than upon that of pressure. H. MACNAUGHTON JONES (*Lancet*, July 2, 1904), exhibited the Downes instrument before the meeting of the British Gynecological Society. He stated that Tate and Teith, as well as Byrne and Skene, had all depended more or less upon the application of these two principles for the control of hemorrhage. It was Skene who introduced the practice of electro-hemostasis. The advantages claimed for it are that there is no sloughing of the tissues, that it enables one to act upon a large surface including the lymphatics and opposing an obstacle to the spread of infection. Furthermore, as it leaves no bleeding surface behind it, the formation of adhesions is rendered less likely. Skene with his instrument did over 200 laparotomies without hemorrhage. He continued desiccation for from one-half to two minutes. Downes' improvement of Skene's instrument lay in the raising of the temperature to 212° F., the insuring of cool handles to the instrument and an increase in the degree of pressure. A maximum current of 60 amperes is necessary. The advantage of this is that the heat developed in the platinum causes the blades to heat more rapidly than with a lesser current, and there is less risk of burning out the platinum. Intestinal resection and anastomosis, in Downes' opinion, can by these instruments be made ideal.

THERAPEUTICS.

Active Principle of Suprarenal Tissue.—E. ABDERHALDEN and P. BERGELL (*Münch. med. Woch.*, June 7, 1904) have succeeded in obtaining the active substance of the suprarenal gland in chemically pure form. This epirenan forms pure white crystals which do not change color, even if kept in solution for months. A solution 1-1,200 to 1,300 corresponds in strength to a 1-1,000 solution of adrenalin or suprorenin. If a 1-1,200 solution is passed into the stomach of a dog, almost the entire amount can be recovered, showing that the vascular spasm in the stomach is so intense that hardly any absorption goes in. It would then be interesting to try epirenan in hemorrhage from gastric ulcers, etc.

Action of Salicylates on the Kidneys.—Careful urine examinations were made by E. KNECHT (*Münch. med. Woch.*, May 31, 1904) on patients who were receiving salicylates for rheumatism, but did not suffer from renal complication before treatment. That renal irritation may follow seems undoubted, but is hardly an argument against the use of salicylic acid for slight albuminuria with few casts were found in only seven out of forty cases. C. KLIENEBERG and R. OXENIUS (*Deutsch. Arch. f. klin. med.*, Vol. 80, Nos. 3 and 4) have studied the same question, and arrive at somewhat different conclusions. Albumin and casts are found in a surprisingly large number of normal individuals and patients suffering from rheumatism before they receive salicylates; after treatment the traces of albumin are more marked, the casts more numerous, and the epithelial cells very abundant, so that there is no doubt that a desquamative catarrh of the entire urogenital tract is set up in most cases. Even coarsely granular and waxy casts were occasionally encountered. A peculiar property of the nephritis is that it disappears even if large doses of salicylic acid are continued. Clinical symptoms of nephritis never appear, and in a patient already suffering from chronic nephritis, the albumin rapidly diminished with antirheumatic drugs, so that above observations possess more theoretical than practical value.

Lithiomercuric Iodide.—It has been generally assumed that the active radical of soluble mercuric salts is the mercurial, and that the higher the percentage of mercury, the more destructive the compound to bacteria. It has been shown, however, that mercuric iodide is fully three or four times as powerful in its effects on bacteria as corrosive sublimate, indicating that the combined iodine is as important a factor in the bactericidal action of the salt as the combined mercury. R. C. ROSENBERGER and J. W. ENGLAND (*Am. Med.*, June 25, 1904) have found that lithium iodide forms a compound with mercuric iodide which possesses features of superior value. It contains about 34 per cent. of mercury, 65 per cent. of iodine, and 1 per cent. of lithium. It is believed that it will decompose the alkaloidal toxins of micro-organisms more effectively than the other mercuric salts, and as it is not precipitated by fixed alkalies, the solution is not decomposed by the alkalies of the blood or the blood serum. A lesser quantity is required and hence there is less danger of mercurial poisoning. As regards the antiseptic action of the reagent, it was found that a 1—16,000 solution readily inhibited the *Bacillus coli, Bacillus pyocyaneus, Bacillus anthracis*, and *Streptococcus pyogenes* for twenty-four hours. The presence or absence of albumin made no difference.

Radium, Finsen Light and X-Ray.—These little understood agents are constantly before the questioning members of the profession. With all the work that has been done on them it is little short of wonderful that no progress has been made toward answering the problem as to how they do their work. C. M. O'BRIEN (*Brit. Med. Jour.*, July 23, 1904), considers that there is too little radium in the world to make its use a serious question, particularly in view of the fact that we have other agents which, to all appearance, do the work much better. He points to the very interesting sequence of events which began with the discovery by Koch in 1882 of the tubercle and, furthered by Finsen, Roentgen and Becquerel, ended in 1898 by the discovery of the Curiès. The unknowable "personal equation" which figures conspicuously in the therapy of all the radio-active agents is all important in the case of radium. He concludes with the statement that the combined use of X-ray and Finsen light affords the best chances of success.

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WALTER REED AND THE PANAMA SANITARY OUTLOOK.

There are still many doubts in the minds of medical men, as well as the general public, concerning the early results of the American attempt to dig a canal at Panama. As to the ultimate success, of course, there is no possible hesitation; but the question is, How many lives is it going to cost, and is American control going to prove any more successful in solving the problems of sanitation and in reducing the enormous death-rate among the workmen which has proven the main obstacle in constructing the canal?

Malaria and yellow fever are two special sources of danger that must be avoided, if every foot of the canal is not to cost a human life. The problem then is whether our modern advance in the knowledge of the distribution of these and kindred diseases is sufficient to insure protection against them to such an extent as to make them at most passing visitants rather than enduring companions of the work across the Isthmus.

It seems that in a measure these problems have been solved, but the test of the solution on a large scale remains to be made. The attitude of sanitarians with regard to the precautions necessary to be taken is very different at the present time from what it would have been even five years ago. When the American occupation of Cuba was forced upon us it was thought that an improvement in the general sanitation of Havana would surely bring about a reduction in the death-rate from yellow fever. For the first year this seemed to be true, and while there was a reduction of more than one-half in the death-rate from all diseases, there was a distinct diminution also in the incidence of yellow fever, and one of the great menaces of the tropics seemed to be abolished. The next year, however, in spite of the most scrupulous municipal cleanliness and insistence on sanitary precautions of every kind, yellow fever raged with more virulence than for many years. More than half of the Governor-General's staff died from the disease, and Cubans were not slow to proclaim that yellow jack would prove too much for the Americans and all their sanitation.

Then came the splendid work of Walter Reed and his band of companions, and within a year the yellow fever problem was forever solved. The disease has not caused any alarm in Havana since, and for practically three years there have been no cases of the disease reported. This, too, notwithstanding the fact that when yellow fever is imported no special precautions are taken to avoid a contact with patients, and the only sanitary regulation is the absolute seclusion of the yellow fever sufferer from mosquitoes. As the result of this Cuban experience it can be said confidently that yellow fever at least will not play an important rôle in causing a high mortality among the laborers along the Panama Canal. What has been accomplished in Havana and elsewhere in Cuba, as well as in Porto Rico, can be done quite as effectually and with the promise of as much success in the canal zone, since the sanitary regulation of this territory is to be under the control of the men who have solved the problem in Cuba.

There remains malaria. This too, is a mosquito-borne disease, and as the result of the experience with yellow fever in Havana, not a little has been learned as to the possibility of reducing the incidence and mortality also of this possible cognate disease. Instead of the vague efforts at protection against this disease by the avoidance of the supposedly mephitic night air, by the consumption of quinine and whisky and care with regard to the possible malarial infection of the water supply, the prophylaxis of this disease has resolved itself into a set of very definite purposes.

Colonel William Gorgas, of the Medical Corps of the United States Army, who is to have charge of the Government's sanitary work in the Isthmus of Panama, has recently stated in the *Review of Reviews*, just what is to be attempted in order to prevent the spread of malaria. Most of the dwellers in the canal zone have had malaria, and many are sure to suffer from relapses. As the district abounds in mosquitoes the communication of the disease to foreign workmen who come in is sure to take place unless due restraint is placed on the mosquitoes. The whole effort of the sanitary corps will then be centralized on the single purpose of preventing mosquitoes from acquiring malaria from those already ill with the disease and then transferring it to those who have not as yet had it.

This will not be as difficult as might be thought, for it is proposed to organize, as in Panama, mosquito brigades in all the villages, whose work will be to destroy every possible breeding place of the mosquito and thus keep the number of the insects down to the lowest possible limit. Besides, all of the present population who have suffered from malaria are to be registered and the state of their health is to be the subject of regular inspection. Whenever they are suffering from a relapse of their malaria they are to be carefully protected from the possible approach of mosquitoes. This has been done with not a little success in Havana. It is believed from investigations already made in Panama that the yellow fever-bearing mosquito seldom wanders more than one hundred yards from the pool in which its antecedent larva was deposited and infected.

All this looks simple enough now. The very favorable outlook, however, is due entirely to the work of one man, Dr. Walter Reed, who, in his quiet, unassuming way, accomplished as much for medicine as did Jenner, Lister or Pasteur. His greatest monument will undoubtedly be the fact that the canal at Panama will be finished without the awful loss of life that would otherwise be unavoidable. It is only proper and befitting his position as an American medical man that another and more formal monument to him should proclaim to admiring countrymen how much the fellow members of his profession appreciate the work that was so successfully accomplished by this compatriot whose untimely death cut off one of the most distinguished physicians of his generation, but whose memory shall remain for all time as one of the glories of American medicine.

X-RAY TREATMENT OF LEUCEMIA.

While periods of marked and at times of long-continued improvement are not at all uncommon in the course of leucemia an actual arrest of the disease with complete recovery has thus far not been observed. Even in the remarkable case of the myeloid type, recently reported by Simon and Campbell (Medical News, July 23, 1904), in which, associated with great improvement of the patient's general condition, both the splenomegaly and the myelocytosis disappeared and have remained absent for over a year, it would hardly be warrantable to speak of a recovery. The writers themselves share this view. They state that "notwithstanding the general improvement and the disappearance of the splenomegaly and the myelocythemia there can scarcely be any doubt that the arrest of the disease is merely temporary, if indeed there is an arrest of the pathological process."

In view of the extremely grave prognosis, which the disease thus offers, with the older methods of treatment the results of recent investigations regarding the effect of the X-rays upon the progress of leucemia are most interesting and deserving of careful attention. The earlier reports dealing with the treatment of leucemia and allied conditions with the Roentgen rays have apparently been overlooked, and credit is usually given to Senn for its introduction. The right of priority, however, undoubtedly belongs to Pusey, whose first report appeared in the *Journal of the American Medical Association* of January 18 and April 12, 1902. Since then additional cases of leucemia treated in this manner have been recorded by Senn, Grad, Brown, Bryant and Crane, Grosh and Stone in the United States, by Krone and Ahrens in Germany and by Bozzolo in Italy. Altogether there are at present available data regarding the X-ray treatment of the disease in nine cases of the myeloid type and in three of the lymphadenoid variety. Barring the first of Pusey's cases, in which no success was had, distinct improvement is recorded in all the remaining cases. This has reference not only to the patient's general condition, but also to the splenomegaly and the blood changes. The improvement begins early and is progressive. That this is the direct result of the treatment can scarcely be doubted. In this respect the study of a single case is perhaps not altogether convincing, but a careful survey of the series certainly warrants the conclusion that in the X-rays the profession now has a definite means by which it can influence the

metabolism of lymphoid tissue. To judge from recent investigations of Heineke it appears, in fact, that the reaction on the part of the lymph follicles of the animal body to the X-rays is very much more delicate than that of the surface epithelium. For he could show that in dogs of medium size exposure of the abdomen to a hard tube at short range for fifteen minutes is sufficient to produce distinct nuclear fragmentation of the follicles of the spleen and the mesenteric lymph glands, which can be demonstrated after a few hours. Similar changes undoubtedly occur in the lymphadenoid structures of the leucemic patient as the result of the X-ray treatment, and are probably responsible for the marked and rapid diminution in the size of the spleen, and in the lymphadenoid type of the disease of the lymph glands. To this rapid disintegration of cellular elements in turn the constitutional symptoms are unquestionably due, which in some instances are so very marked, and may indeed assume very grave proportions.

In what manner the X-rays produce the ultimate beneficial effect upon the leucemic patient, whether through direct influence upon the primary etiological factor, or secondarily in consequence of the tissue destruction and the coincident liberation of specific antibodies, these are questions which at present can only be subjects of speculation.

As regards the final outcome, sufficient time has not elapsed since the report of the various cases to warrant any far-reaching conclusions. To speak of a cure, as Senn especially has done, is certainly not justifiable. His myeloid case, in fact, has already relapsed, and two other cases (Grosh-Stone, Ahrens) have died. The results, however, are nevertheless sufficiently encouraging to warrant the adoption of the X-ray treatment as a matter of routine in the management of these cases, in addition to the older methods, and especially the use of arsenic in the high doses suggested by Osler.

In conclusion, we should suggest that future reports be made somewhat more extensive than has been the case with the majority of those recorded so far, and that careful attention be directed to the blood changes not only for diagnostic purposes, but also in order to afford a control of the treatment instituted. Especially important in this sense is the behavior of the mast cells, which unfortunately has been neglected in most of the reports. It is interesting to note that in the case reported by Simon and Campbell, above referred to (not treated by X-rays), the mast cells remained high, even after all other symptoms of the disease had disappeared.

"FROM YOUTH TO HOARY AGE."

WHETHER moral suasion is superior to corporal punishment and should supersede it has been a mooted question ever since the days of Solomon's didactic and ex-cathedra statement, that to spare the rod was to spoil the child. The trend of modern medical civilization, however, has been undoubtedly to eliminate the latter. Scholars in the large public schools of Great Britain are no longer "hoisted or swished." The big white Czar of all the Russias, luckily for himself and his kingdom, abolished the knout before they became "busy" with the little bee, in the Japanese bonnet, that is now rendering so uneasy the head that wears the Slavic crown. Flogging has been done away with in the navy, and it is now a court-martial offense for an officer to strike an enlisted man. Even the assailant of the classical "Billy Patterson" is a fugitive from the outraged laws of an offended country, and there is no longer any opportunity for the professional exponent of humility to turn the other cheek.

"Moral suasion" is unquestionably a great force, and if it failed the other day, when some dozen guards of a homeopathic insane asylum sat by the river on the gunwale of an unmoored boat, with their brass buttons shining on their blue coats like the stars on a summer sea, and piteously begged an escaped lunatic, who was struggling in the rapid tide, to come back (like Lord Ullin's daughter), it was not their fault that the system did not work. This was undoubtedly the exception that proved the rule; the experiment that, while it failed, left the principle the same.

On the other hand, the question naturally arises, are we not at times, like the world, "governed too much," and does not a law, that may be unquestionably righteous and just for the masses, work often great injustice to the individual? Thus, that much-derided owner of the two dogs who cut two holes in his fence, a big one for the large dog and a little hole for the small one, may have cut much better than either he or his critics knew. For there might easily be circumstances in the canine existence that would render it very hard and humiliating for the little dog to pass through the big hole, even though it was much too large for him. Only a few weeks ago a judge on the bench in Virginia publicly announced that he unreservedly favored the restoration of the whip-

ping-post as a cure for the chronic wife-beating diathesis, and there are few members of the medical profession who will not agree with him. And yet this same judge, by the inflexibility of the statutes, would be compelled to mete out a heavier punishment to a starving woman who stole a loaf of bread for her hungry children than he would to "the man who would raise his hand against a woman save in love and kindness," whom the late Edwin Forrest anathematized so forcibly.

Luckily, however, a wise judge can, if he so desires, at least temper the wind and add the warmth of the judicial ermine to the scanty pelt of the shorn lamb when it is of tender years. That he does not always do it, however, is true, and the arrest, trial and subsequent conviction of a few boys for playing ball on a vacant lot, in a neighboring town, seems to be another instance of misapplied judicial zeal and a case where the fine points of the law would have been more honored in the breach of the offenders than in the observance of the municipal regulations.

As we have said, class legislation is always a delicate matter to undertake, and the age limit has more to do with the division of a population or a community of persons into sections than either the possession of wealth or the inheritance of social standing. Boys will be boys, and the production of a bat and a ball is two-thirds of a problem, of which the finding of an unoccupied field is a complete solution. For good, as the common-school education in this country undoubtedly is, there are few specimens of the primary classes that are able or willing to read the writing on the wall, particularly when it takes the form of a notice to trespassers, or an injunction to keep off the grass.

Of course, in a large city, where the lots are small, and where the passers-by are consequently in danger of being struck by the ball, or the neighbors are near enough to be disturbed by the noise inseparable from a congregation of boys, it would be impossible to permit the frequent gathering together of a youthful community, either in the name of baseball, football, marbles, or whatever game the season has brought in vogue. But even then verbal warning may be given, and we cannot help thinking that the popular indignation that seems to have arisen locally in this case might have been avoided if the village Dogberry had exercised a little tact, or if the magistrate, like "Father William," had only remembered the days of his youth. For there is a popular belief in the minds of all of us that we can only be young once, and though this seems to have been an overliberal estimate, in the case of these municipal authorities, yet a timely recollection of it is the key-note of all successful government.

It may be true that the laws are not enacted for the individual, but are framed for the masses, and of necessity must be the same. Yet, even then the sauce for the gosling need not be that for the gander, and the judge on the bench always has the ability to make the punishment fit the crime to a degree at least sufficient to remember that old heads do not grow on young shoulders, and that, as a rule, children do not wear hats of men's sizes.

There is a trite old proverb that "reformed rakes make the best of husbands." If this be true we cannot say, but we should not care to bring our case before a judge in whom age had staled and custom withered all the attributes of youth, and whose recollections of the past were tinged and saddened by his present aches and pains.

Both Solomon and David lived extremely happy lives,
And enjoyed themselves immensely with their horses and their wives,
But, when their blood ran colder, they were seized with aches and qualms,
Then Solomon wrote his Proverbs, and David wrote his Psalms.

ECHOES AND NEWS.

NEW YORK.

Convention of Chemists.—The first annual convention of the Society of Chemical Industry to be held in America will begin in this city at the Chemists' Club on Wednesday, September 7, and will continue until September 12. The foreign delegation will then be taken aboard a special train as the guests of the New York members for a trip through the South and Middle West. The society is an international organization, and members will be present from many foreign countries. One feature of the meeting will be a visit of inspection to the larger manufacturing plants all through this country. It is expected that many important questions relating to the chemical industry will be considered.

St. John's Guild.—Since July the seaside hospital of St. John's Guild has treated over 2,200 patients, and its floating hospital has carried out over 25,000 children and their mothers. This summer, as the Health Department has testified, has been marked by an unusually large amount of suffering among the children of the poor, and to deal with the emergency properly the guild has been put to so much expense that it now needs $15,000 additional to enable it to continue its hospitals in operation during the summer. The mere announcement of that need ought to be enough to bring in the money at once for so noble and necessary an institution of humanity. The hospitals are in charge of physicians of special ability, Dr. Abraham Jacobi being the president of its medical board, and in every respect the guild deserves support and commendation.

Bronx Typhoid.—There are now over 200 cases of typhoid fever in the Bronx, according to a canvass made

among private physicians there by Dr. M. S. Gregory, Acting Superintendent of Bellevue Hospital, and other officials of that hospital and its allied institutions. This number is far above the normal rate, and the presence of so many cases is renewing the fears felt a month ago, when many cases of typhoid were reported among the Italians who live in the Bedford Park section of the Bronx and work on the Jerome Park Reservoir. The number of patients is so large that it is causing Bellevue and its allied hospitals trouble in caring for them. Fordham Hospital, which is nearest to the place where their cases are said to have originated, has only twenty cots in its medical ward, and the overflow has been relieved by sending such patients to Harlem Hospital and to the Bellevue and allied hospitals, neither of which has much extra room. Dr. Gregory has given orders for the erection of a temporary cottage on the grounds of the Fordham Hospital. This will provide room for about a dozen typhoid patients. The epidemic is apparently of a mild type, only two persons have died of the malady during the first three weeks of August.

Sydenham Hospital Charges.—Charges have been made to the State Board of Charities against the trustees and managers of the Sydenham Post Graduate Hospital, at No. 339 East One Hundred and Sixteenth Street, by four physicians formerly attached to its staff. The complainants are Dr. Salo Cohn, Dr. Louis Lichtschein, Dr. A. L. Goldwater, and Dr. B. M. Feldman. Two of the four allege that they were required to pay for appointment of the hospital staff a certain sum down and an additional amount monthly. It is also charged in sixteen specifications that the hospital has been conducted "in an unsanitary, unlawful, negligent and improper manner." Tuberculosis patients are said to have been kept in wards with other patients, unlawful autopsies are alleged to have been held, violation of corporation ordinances in the matter of fire escapes is asserted, substitution of medicines is said to have been practised, and other abuses are alleged. The hospital was incorporated in June, 1892, and licensed in February, 1903, under a law passed in 1899. It receives no State aid, but because of the license granted by the State Charities Board, is subject to its inspection and regulation. Its president is W. L. Spiegelberg, whose connection with the hospital dates back only to January last, a period subsequent to the retirement of the physicians who now prefer charges. The hospital, as a result of the charges, which all its officers deny absolutely, was thrown open for public inspection yesterday. To the layman it appeared well equipped and properly conducted. The directors will meet to-night to consider the charges and decide on a course of action.

School Hygiene and the Growing Child.—In an article for the Educational Supplement of the New York Times, Dr. L. E. La Fetra discusses the relationship of physical, intellectual and moral growth and development. At whatever point in the educational system the boy has to stop to take up his life work, up to that point his training should have been broad and symmetrical; the training of the body should be recognized to be as important as that of the mind. The schoolroom should be large in proportion to the number of scholars, well lighted and so arranged that the light may come in on the left hand side of the pupils. Good ventilation is important, the current of air should pass from inlets high up on the wall to outlets low down on the same wall; the temperature should be between 64° and 62° F. for the larger children, 68° F. for the smaller, the rooms heated by indirect radiation. Besides the recitation rooms, the school building should have a gymnasium with shower baths and a swimming tank if possible. It is important to have sufficient ground around the school building for athletic sports; in the city the roofs could be used for playgrounds. To obtain the best physical development, which statistics show is essential to the highest intellectual growth, it is necessary in our civilized communities, where the natural activities of the average child have little place, to make gymnastic exercises a part of the general curriculum. Exercise, especially highly co-ordinated movements, develop not only the muscles, but the brain as well, and team games tend to raise the moral character. Bathing is of equal importance, for it stimulates the nervous system and prevents children catching cold, besides acting as a cleansing agent. Overfatigue must be guarded against, especially in children who are of a nervous disposition, anemic or growing rapidly; girls entering on the adolescent period are extremely liable to overfatigue. Signs of overfatigue: Awaking unrefreshed in the morning, inability to concentrate the attention, loss of memory and irritability should be watched for and guarded against. Competitive examinations are important factors in causing overfatigue, and should be eliminated as far as possible by substituting the daily recitation marks. The daily medical inspection of schools is a commendable feature of recent school regime. On the intellectual side, too much stress is put upon certain fads, and not enough on the fundamental studies. The recitation periods should be short, with the most difficult subjects in the morning. Elective studies have no place in any grade below the latter part of the high school; disciplinary studies are of the greatest importance. In the higher grades hygiene and some knowledge of the processes of reproduction should be taught. Manual training is of great value in that it combines physical and mental training. Courses in domestic science are valuable adjuncts to education of girls.

Resignation of Dr. Millican.—Having had repeated for the third time an invitation to go to St. Louis and take over the management and editorship of the St. Louis *Medical Review*, Dr. Kenneth W. Millican, of New York city, has decided to accept. For six years Dr. Millican has been a member of the editorial staff of the New York *Medical Journal*, and in this capacity has impressed its readers with his broad culture, untiring energy and unusual literary ability. In losing Dr. Millican from the position of Associate Editor, the New York *Medical Journal* suffers a loss that will not be easily repaired. In his new relations the MEDICAL NEWS bespeaks for Dr. Millican an early recognition of his worth, and wishes him and the St. Louis *Medical Review* the success which their combination merits.

PHILADELPHIA.

Additions to Almshouse.—Estimates have been asked for the construction of seven new buildings for the Almshouse being erected in the Forty-first Ward. The administration building has already been completed.

Pittsburg to Build Filtration Plant.—Mayor Hays has signed the ordinance authorizing the issue of $5,000,000 bonds for the construction of a filtration plant. This measure has been agitated for a long time, and even now the city controller will contest the ordinance on the ground of a technical flaw in its passage.

New County Medical Societies.—The physicians of two Pennsylvania counties have recently organized medical societies. On July 29 a society of 15 members was formed at Bedford, in Bedford County. Dr. S. G. Statler, of Alum Bank, was elected the first president. August 25, the physicians of Adams County formed a society at Gettysburg, with Dr. J. W. C. O'Neal, of that place, as president.

Pennsylvania Medical Journal.—The editorial management of this journal favors an increase in size of 8

or 16 pages. This change would permit the publication of papers read before the county societies; at present there is barely room for those read at the meeting of the State organization. The Bucks County society has endorsed this proposed increase, and the question will probably be presented to the State society at the coming meeting.

Medical Society of the State of Pennsylvania.—The annual meeting of this society will be held in Carnegie Hall, Pittsburg, September 27 to 29, 1904, under the presidency of Dr. W. B. Ulrich, of Chester. As at the meeting of last year, two sections will be held on the second day and the first session of the third day. The addresses will be given by the following: Medicine, Dr. Henry Beates, Jr., Philadelphia; Surgery, Dr. W. D. Hamaker, Meadville; Obstetrics, Dr. X. O. Werder, Pittsburg; Hygiene and State Medicine, Dr. A. C. Abbott, Philadelphia; Neurology, Dr. W. K. Walker, Dixmont; Laryngology, Dr. D. W. Mears, Scranton.

Disinfection with Ozone.—An experiment is soon to be tried in Philadelphia which may be of value to communities that are in need of purer water supplies than they now enjoy. The New York *Tribune* states that a private corporation in that city is erecting a plant on the banks of the Schuylkill for the purpose of showing the superiority of disinfection with ozone over the system of sand filtration adopted by the municipality and already in service along the Delaware. The method about to be tried has been introduced on a small scale in two or three foreign cities, but is practically unknown in America. It differs from that employed by Albert E. Wolf, of this city, ten or twelve years ago, and by M. Hermite, in France. Those men treated salt water with electricity, and thus liberated both ozone and chlorine. The new process produces only the former and obtains it from the air. By means of suitable electrical apparatus the oxygen is separated from the other gases with which it is associated, and is so modified as to acquire powerful germicidal properties. These are exercised upon contaminated water if the ozone is permitted to bubble up through the fluid, and at the same time the latter is clarified and deodorized. Up to the present time filtration has done more for the purification of water in which the bacteria of typhoid fever and other diseases are present than any other mode of treatment. Its benefits are not uniform. Through mistakes of administration it occasionally fails to yield the expected results. At best it only reduces the number of microbes. It does not completely eliminate them. Still, it has materially lowered the death rate in many localities which formerly suffered a heavy mortality. To convince disinterested sanitary engineers that the use of ozone will prove more satisfactory in the long run will be by no means easy. A system which works admirably in the laboratory does not always behave equally well on a large scale. It is easy to believe that if a globule of ozone comes in contact with a mischievous bacillus the latter will be instantly killed. Whether a sufficiently thorough commingling of the gas with the water can be insured to reach all the germs in the fluid is another question. A second essential to efficiency is continuity of operation. If the machinery gets out of order there must be an interruption either of the water supply or of the disinfection, and instances of the latter kind appear to have occurred at Wiesbaden. It is to be hoped that the apparatus which is about to be installed in Philadelphia will have an endurance test, to clear up uncertainty on this point. If the men under whose auspices the venture is made can also demonstrate the economy of the process, they will overcome doubts which have been entertained by experts who apparently have none regarding its excellence. Cities which cannot supervise and control the territory from which their water supply comes are exposed to peculiar danger. Practically all of the typhoid epidemics which occur in this country and Europe result from such inability to prevent contamination. The only resource left in cases of that kind is to purify the water before it is distributed for consumption. The number of communities which have neglected to adopt one safeguard or another is astonishingly large. In the near future the scope of their choice may be considerably widened. In a dozen or more places the copper sulphate system is undergoing a trial this year, and before many more months have elapsed a correct judgment of its value should be possible. If the regeneration of water from the filthy and poisonous Schuylkill should prove effective and cheap, an additional instrument for much needed sanitation will be available.

CHICAGO.

Election of Dr. James.—President Edmund J. James, of Northwestern University, has been offered and has accepted the presidency of the University of Illinois, and will assume the duties of his new office November 1.

Laboratory for the State Board of Health Established.—It is said that the State Board of Health has secured orders in Springfield for a laboratory which is being equipped with the chemical and biological apparatus necessary for carrying on the work of the Board, with special reference to examinations of water, the prevention of communicable diseases, tuberculosis, etc.

The Milk Question.—The *Weekly Bulletin* of the Chicago Health Department has the following to say with reference to the question of milk: "The dealers in the city, who receive milk, were given individual warning to the effect that such milk was from cows that were being improperly fed, and that they must not receive it or sell it in the city of Chicago. Those who did not comply have been prosecuted and fined. A great many dealers have also been fined for not returning their milk cans to the shipper clean and dry. It is a well-known fact that a small amount of sour milk will readily sour a large can of fresh milk. This sour milk produces digestive troubles in children, such as vomiting, flatulence, and diarrhea. Other diseases, such as tuberculosis, which is very prevalent among cows, may be conveyed by milk. The dairy inspectors are paying especial attention to this fact."

Conveyance of Typhoid Fever, Scarlet Fever and Diphtheria by Milk.—"Typhoid fever, scarlet fever and diphtheria are sometimes conveyed by milk; especially typhoid, if the cans and bottles are washed in foul water and not sterilized. Cities well supplied with water of good quality and having a modern sewerage system derive typhoid fever only from contaminated country milk or vegetables or the return of people in the autumn from less sanitary places. The bacteria in milk produce acids and toxins, which are injurious to infants and invalids. To destroy these milk is often pasteurized. This, however, is somewhat objectionable, as it destroys certain enzymes that are necessary for the digestion of the milk. It is easy enough by diluting pasteurized cow's milk and adding milk sugar to obtain milk identical in per cent. of its principal constituents with mother's milk, but the trouble due to the indigestibility of the caseins remains, therefore, mother's milk is about the only thing for the baby."

Improvement in the Public Water Supply.—"For the second time in ten years a rainfall of more than three-quarters of an inch in twenty-four hours has failed to cause contamination of the public water supply of Chicago. The first on record was that following the rainfall of July 31, which was more than

nine-tenths of an inch. During the twenty-four hours ending at 7 P. M., Aug. 19, there was a precipitation of more than one and one-fourth (1.27) inches, but the chemical determinations of Aug. 20 showed a purer water at each of the nine pumping stations than samples taken seven miles from shore and identical with samples taken twelve miles from shore. There is no obvious or plausible reason for this but the continuous operation of the drainage channel. This is the fifth year that an average of more than 300,000 cubic feet per minute, night and day, has been flowing from the lake down the Desplaines and Illinois valleys, and during this time there has been the reduction in deaths from the impure water diseases shown in the following table—the dividing line being January, 1900, date of opening the channel:

Deaths from—	Four Years. 1896-1899	Four Years. 1900-1903.
Acute intestinal diseases.....	8,119	8,898
Rate per 1,000 of population.....	16.41	12.44
Typhoid fever.....	2,366	2,235
Rate per 1,000 of population.....	3.68	3.10

"If the rate of the four years 1896-1899, before the opening of the drainage channel, had obtained during the last four years, there would have been 11,724 deaths from the acute intestinal diseases and 2,629 from typhoid fever, or 2,826 more from the former and 394 more from the latter (a total of 3,220) than did actually occur. The money value of these 3,220 lives—16,100,000—is only one item to be placed to the life-saving credit of the drainage channel; a larger, but intangible amount would accrue, if physical suffering of the victims, mental suffering of parents, wives and husbands and impairment of vital resistance of the survivors could be figured out in dollars and cents. From the standpoint of public health the drainage channel is the best investment Chicago ever made."

Decreased Death Rate for August.—The average August death rate of the last decade was 1.84 per one thousand of population, and the lowest during that period was 14.53 in 1901. For the first twenty days of August the rate was 12.67, and for the week ending August 20, the 437 deaths reported represent an annual rate of only 11.62. These figures show a reduction of 20 per cent. from the previous lowest, and of 31 per cent. from the previous August average. The deaths numbered 437, of which 108 were from intestinal diseases; 59 from consumption; 34 from violence; 29 from Bright's disease; 26 from cancer, and 25 from pneumonia.

A "Hospital" of the Past.—"Twenty-five years ago the Cook County Hospital," said Dr. I. N. Danforth, "stood at the corner of Eighteenth and Arnold streets. In close proximity was a slaughter house where a chime of ear-splitting squeals testified to the constant march of porcine mortality, while frequent odors of "rendering" tanks added most convincing confirmatory evidence. The neighborhood was then infested with lager beer saloons, soap factories, cooper shops, and other noisy and fragrant adjuncts, while the constant snorting of locomotives and the rumble of railway cars, including the ceaseless switching of freight cars made up a pandemonium sufficient to weary a well man and drive a sick man crazy. Smoke, dust, dirt of every conceivable kind, darkened the air, offended the nostrils, provoked "sternuation" (vide Sir Walter Scott), and soiled face and hands and clothing, although most of the hands and faces found in that locality were not essentially changed thereby. In such a locality as this and amid such surroundings as these, stood the old County Hospital—but let us look at the institution itself. The edifice was an ugly rambling affair, built I know not when or for what purpose; when I first knew it in 1867, it was thoroughly out of repair, and was odiously repulsive in all its appointments. It was ill-kept; the wards were dirty, the ceilings grimy, the furniture unclean, the beds and bedding were unfit for the steerage of an emigrant vessel, and the whole aspect and make-up of the concern was a disgrace to Chicago and Cook county. Rats and mice galloped about the corridors, infested the wards, and frequently invaded the beds of the patients. Cockroaches abounded in solid battalions; mosquitoes and flies in hungry clouds buzzed through the wards; while an "offensive bug which infests beds," called by a gentleman named Baird the *Cimex lectularius*, provoked a deal of both profanity and scratching on the part of patients who were sufficiently vigorous to do either or both. A more detailed description of this hideous concern would only set forth its repulsiveness in stronger colors. It was *all* bad, except the Medical Board, which was generally made up of able devoted men who did the best they could to make the institution respectable. The nursing service was unique; the nurses were always political appointees; that is, men and women who in some way could "influence" voters. The "rich Irish brogue" which so captivated that old political peacock, Gen. Scott, during his barren Presidential campaign, was "endemic" among the nurses, although a German or Scandinavian expletive, occasionally broke the silence and varied the discordant jargon. Of course, the cooking was execrable and the patients constantly complained of their miserable food, and of the disgusting manner in which it was served. In the year 1878, the Chicago daily papers, being incited thereto by a deputation of physicians—whereof the writer was one—investigated the Cook County Hospital, and proceeded to mercilessly expose its disgraceful condition—in the name of the outraged sick poor they demanded a thorough reform, and they got it. Never did a Board of County Commissioners get a more thorough scorching; never did said body more thoroughly deserve such scorching, and never did a drastic remedy produce more immediate and radical results. The present stately hospital of Cook county is directly due to the potent influence of the daily papers—the newspaper press—and its influence was experienced none too soon."

GENERAL.

Officers of Pan-American Medical Congress.—The following officers of the Fourth Pan-American Medical Congress have been appointed: Dr. Julio Ycaza, president; Dr. Manuel Coroalles, vice-president; Dr. José E. Calvo, secretary; Dr. Pedro de Obarrio, treasurer, and Drs. J. W. Ross, J. Tomaselli, M. Gasteazoro, committee.

New York and New England Association of Railway Surgeons.—The fourteenth annual meeting of the New York and New England Association of Railway Surgeons will be held at the Academy of Medicine, New York City, Nov. 17 and 18, 1904, under the presidency of Dr. C. G. J. Finn, of Hempstead, Long Island. Railway officials and all surgeons interested in this work are cordially invited to attend.

The Aquiline Nose and Voice Development.—Dr. Louis Robinson asserts that the aquiline nose is requisite to a full development of the human voice. His contention as to the origin of this feature, according to the *Medical Times*, is that through the night of unrecorded time during which primitive man was slowly and painfully progressing toward civilization, the voice was the only rational means of exercising influence. Oratorical ability and a sonorous voice thus became of exceeding importance to the aspiring and ambitious, and the ulti-

mate formation of an aquiline-nosed race would become the necessary result of the better assured survival of such favorably endowed individuals. Thus, says the *Popular Science News,* the long nose would tend to become masterful, to form; first, an aristocracy, and ultimately so to leaven a people as to insure their dominance, as was the case with the Romans. Dr. Robinson cites the North American Indian, the Moaris and the Basuto negroes, among whom are the celebrated Zulus, as instances of large-nosed and oratorical peoples.

The Waldeck-Rousseau Operation.—M. Waldeck-Rousseau was operated on on May 5 for cancer of the liver. According to the general understanding the operation was only partly successful, but it enabled the patient to gain strength enough to warrant his removal from Paris to Corbeil, where it was hoped the country air would restore his strength entirely. A second operation was performed on August 10 by Professor Kehr and Dr. Armour, a Canadian surgeon, assisted by three French surgeons, after a consultation at which it was decided that since the liver had ceased to perform its functions an immediate operation was the only hope of saving the patient's life. It at first appeared that the operation would prove successful. But the pulse became more feeble, and despite the administration of injections M. Waldeck-Rousseau gradually sank and died without gaining consciousness. Professor Hans Kehr, of Halberstadt, in the *Medicinische Wochenschrift,* defends himself against the attacks of French medical journals on the operation performed on ex-Premier Waldeck-Rousseau. He says that the patient had absolutely no chance to recover without an operation, whereas an operation saves 34 per cent. of such cases. M. Waldeck-Rousseau had nothing to lose through the operation, since he had only a few weeks, perhaps months, to live, and an operation was the only hope of saving him.

Report of Committee on Determination in England.—The English Inter-Departmental Committee on Physical Deterioration has issued its report in London, and makes the following recommendations: For the collection of definite data bearing upon the physical condition of the population a permanent anthropometric survey should be organized to take measurements of children and young persons in schools and factories. A register of sickness not confined to infectious diseases should be established, and an advisory council created, the composition of which might be modeled on the French Consultative Committee of Public Health, to apply information derived from the anthropometric survey and the register of sickness, and to advise the Government on points concerning public health; and the local authority, as an experimental effort in the direction of fixing a standard of overcrowding, should notify in certain of the worst districts that after a given date, no crowding in excess of such standard would be permitted. On the subject of alcoholism, the committee advocates systematic practical training of teachers to enable them to give rational instruction in schools on laws of health, including demonstrations of the physical evils caused by drinking, whereby more may be done to check degeneration resulting from drink, by bringing home to men and women the fatal effects of alcohol on physical efficiency. Impressed with the enormous sacrifice of infant life due to insufficient or improper feeding, the committee believes the ultimate remedy lies in the instruction of girls in the process of infant feeding and management, and recommend the establishment of health associations for training of mothers in hygiene, and that girls over fourteen might be made to attend occasionally municipal crèches wherever established. A further recommendation is to prohibit the sale of tobacco and cigarettes to children.

Copper as a Typhoid Germicide.—Attention has lately been attracted to the confident announcement made by Dr. Edward Martin, of Philadelphia, Director of Public Health and Charities, that water infected with typhoid germs may be sterilized without boiling or filtering, by permitting it to stand in copper vessels for four hours in the ordinary temperature of living rooms, or for twenty-four hours in a refrigerator. Dr. Martin further states that the specific infection of Asiatic cholera in water may be destroyed by the same means. This hypothesis had previously attracted some attention in Washington, and a suggestion has been made that the soldiers of the United States Army be provided with canteens made of copper, to the end that the always large and hitherto unavoidable risk of typhoid fever, dysentery, and like diseases in camps and barracks may be minimized. In editorial comment, the New York *Times* says, that very likely water allowed to stand in copper vessels until it has taken up a certain amount of the metal in the form of soluble salts is sterilized, such salts acting as germicides with a special antipathy for typhoid and cholera bacilli. This might be true, and yet the discovery not be the priceless boon to suffering humanity which at first glance it would seem to be. There are a number of possible additions to water which would have this effect, but which the conscientious chemist would hesitate to recommend for general family use. As the rule water, if pure and wholly free from carbonic acid, will not attack copper, but when a surface of that metal is exposed to the action of air and water in combination it is more or less energetically attacked, especially if any acid is present. Inasmuch as unboiled water usually and moist air always contains carbonic acid, copper exposed to the action of either is more or less rapidly coated with a film of basic carbonate, popularly but incorrectly called verdigris. Copper is a metal which is readily dissolved in the weakest acids, and also in weak alkaline and saline solutions. Up to this time it has been considered a safe generalization, verified by numberless observations and experiments, that all potable waters will dissolve more or less copper and that all its soluble salts are more or less energetically poisonous. Some of the salts of copper, notably its basic carbonate, are not soluble in cold water, and may be removed by filtration, but most of them are both soluble and poisonous, and some of these are likely to be formed with the carbonate, or in acid water without it. The action of the soluble salts of copper on the human system is indicated by nausea, violent headaches, cramps, and acute pains in the stomach and bowels, faintness, convulsions, and even death. Boiling suspected water is a good deal more troublesome, no doubt, than storing it in copper vessels, but it is preferable from every point of view, and effective filtration is better than either.

Fair for Nassau Hospital.—A fair for the benefit of the Nassau Hospital, of Mineola, will be held at Mr. and Mrs. Clarence Mackay's home, Harbor Hill, Roslyn, L. I., on Saturday afternoon, September 24, from 1 to 7.

Roentgen Ray Society.—The fifth annual meeting of the American Roentgen Ray Society will be held at the Louisiana Building, 911 North Vandeventer avenue, St. Louis, Mo., Sept. 9, 10, 12 and 13.

OBITUARY.

Dr. William Rhys Pryor, of New York city, died August 26, in his forty-seventh year, in St. Vincent's Hospital, where he had been ill for a fortnight. He was one of the most distinguished practitioners of obstetrics and gynecology in the country. Dr. Pryor performed an operation a few days ago at Blooming Grove, Pa., in a room in which the temperature was 104° F. After the

operation he collapsed. He was brought back to the city and taken to St. Vincent's Hospital. He was a son of ex-Justice Roger A. Pryor, of the Supreme Court. Although he had a large practice, his work was mostly charity work among the poor. He was graduated from the College of Physicians and Surgeons in 1881. Dr. Pryor had written several books of value to his professional brethren, among them "Text-Book of Gynecology." In addition to many medical and scientific societies, he was a member of the Manhattan, Colonial and New York clubs.

Dr. Charles Newton, of New York city, died at Nantucket, Mass., on Sunday, August 7. Dr. Newton graduated at Bellevue in 1884, became a well-known practising New York physician, and was for many years Surgeon of the Ninth Infantry, N. G. S. N. Y. He was a member of many medical societies and fraternities.

SOCIETY PROCEEDINGS.

CHICAGO ACADEMY OF MEDICINE.

Regular Meeting, held March 11, 1904.

The President, Wm. Allen Pusey, M.D., in the Chair.

Silver Salts in Gonorrhea.—Dr. Wm. L. Baum read a paper on this subject.

Dr. Fenton B. Turck stated that some time ago Dr. Howard A. Kelly, of Baltimore, followed out some of the work done by Guyon, of distending the bladder and observing the changes in the mucous membrane. Kelly used air instead of water. He found that upon distention it produced the usual anemia, followed subsequently by hyperemia, and that this process being continued, the condition found in cystitis was very much improved. Kelly presented some plates showing the differences before and after treatment. The question arose as to what was the physiological action of such pressure. It was evidently not due to the water or fluid used, but to the tension produced upon the vesical walls. Intermittent pressure or tension is a universal stimulant of all protoplasm. Various mechanical methods of stimulating the muscles, as used in the laboratory were mentioned illustrating tension in its various forms as a universal stimulant. According to the recent observations of Mathews and Wicher all protoplasmic activity was excited by various forms of motion. Parthogenesis of the egg of the starfish was produced by intermittent mechanical agitation. Tension being thus recognized, by most observers, as a universal stimulant it is not surprising to notice that similar results are obtained in the urethra. The question now obtains, What was the curative effect or what was the exact cause that brought about restoration?

Dr. Turck spoke, first, of hyperemia, saying it was recognized and admitted that hyperemia was the result of such tension, but only after the tension had been released. If the tension was continuous, there would be no such favorable result. It must be intermittent in order to act as a stimulus, and this tension and the release of tension must be more or less abrupt, the result being a greater activity on the part of the capillaries and of the contractile tissue. Rhythmical motion resulted from such tension, and this motion continued after its removal. It did not mean simply that passive congestion or stasis of the blood vessels was brought about, but that more blood passed a certain point within a given time than before. Such physiological hyperemia resulted in more active metabolism of the cellular tissues. With regard to increased leucocytosis being one of the important changes that takes place, he said that various stimulants or various exercises caused increased leucocytosis by bringing the leucocytes more to the periphery. There was now among the German and French investigators considerable controversy as to the value of leucocytosis in the curative processes of infection. It was known that hyperemia produced certain other conditions which better explains the various changes that occur. When more blood passed a given point at one time than at another, *i.e.*, a larger amount of blood brought to that part, a larger amount of activity occurs as the result of more rapid stimulation; there is a greater bactericidal effect, as well as antitoxic properties in the serum. This effect may be local or general. Recent experiments show a local effect upon the eyes of rabbits after artificial hyperemia, this hyperemia producing an artificial immunity. The studies the speaker had made had been in the direction of producing such stimulation in animals by mechanical means, showing the great immunity which can be produced by either mechanical or physical means, such as, for example, heat. Heat stimulation caused rapid hyperemia, this hyperemia acting with bactericidal and antitoxic effect. Attention was called to the effects of heat stimulation produced upon the arm in a case of local infection in which the continuous heat stimulation produced increased hyperemia, the latter causing an effect upon the bacteria already present, and the antitoxic effect in the serum curing the local infection. If further experiments could be carried on, they would very probably show that the hyperemia thus produced, that is to say, the more rapid circulatory effect in the urethra was the real factor in producing the bactericidal and antitoxic effect. The embryonal cells multiply and displace the old necrosed epithelium. He said it would be an interesting experiment to try the effect of tension produced by air instead of water, getting alternate pressure, and producing intense hyperemia in this structure, and experiments would probably show that air was equally as valuable as water for this purpose. He had found in other mucous membranes, such as those of the colon and stomach, quite as remarkable results were obtained by this alternate tension with air as with water. In fact, he thought air was preferable to the use of water. In water we have an incompressible substance, while in air we have a more elastic body, and considerable tension could be brought about without any harm, such tension resulting in a cushion-like effect, producing more powerful stimulation and resultant contractions. He further called attention to the experiments that had been made along this line of cushion-like effects by means of air. These experiments showed that such tension and its withdrawal was the most powerful of all local and general stimulants at the command of the physician. Heat sometimes might be increased, but the principal effect was derived from tension, and its abrupt withdrawal.

Dr. Turck stated that when he was a student in Berlin he saw a very interesting case in the nose and throat clinic of Professor Fraenkel, of pachyderma of the vocal cord, the diagnosis having been confirmed by the Professor himself. The patient was a woman who had frequent injections of iodine and of weak nitrate of silver solutions into the larynx some time before, and the question was raised whether this had not a good deal to do with the origin of the pachyderma of the cord. The woman was markedly anemic, which point was also brought out as a contributing effect, the anemia causing this pachyderma. But the work done by Dr. Fütterer showed that there was a trauma produced first, and in the center of this growth metaplasia occurred. One was almost compelled to accept the findings of Dr. Fütterer as a true metaplasia. In the case he reported

of pachyderma of the vocal cord chemical trauma undoubtedly played the important rôle. It was supposed to have been the starting-point of the pachyderma in the presence of anemia. One realizes how variable clinical conditions might be, but on the work of Dr. Fütterer one had the absolute experimental proof in the removal of a section, showing the ingrowing of normal glandular tissue and springing almost spontaneously from the center of this was the development of metaplasia.

Professor C. S. N. Hallberg asked whether or not it was the opinion of the essayist that the organic compounds were preferable to the nitrates? What led to the production of the organic compounds was that they were not caustic; that they would not form insoluble compounds with albumin or insoluble chlorides, and that it was these particular properties which gave them preference over the nitrates. He understood the essayist to say that the first effect of the silver compounds on the epithelia was favorable to exfoliation. He asked whether this was not produced in an equal degree by the nitrates as well as by the organic compounds?

Dr. Baum, replying to Dr. Turck, said that air was difficult to use in the urethra with an ordinary syringe. While it was of light specific gravity, it had one very great drawback in the treatment of diseases of the urethra, or in closed tubes of this kind, and that was that air was not a pleasant thing in cases in which there were erosions of the mucous membrane, so that air distention would have to give way to the more common form of distention with water, which was not only practicable, but could be obtained at any time. It could be kept in the urethra, whereas air would escape in spite of everything by the side and reduce tension too rapidly.

In regard to the strength of the various silver solutions, he did not see that the quantity of silver had any appreciable effect upon the results obtained, except there were some silver salts used in which the subjective symptoms were so much pleasanter than they were when other silver salts were used in preference to some of the later ones. As to nitrate of silver, there was no question in the author's mind, but what the subjective symptoms played an important rôle as far as the confidence of the patient and the ultimate results to be attained were concerned. There was much to be said about nitrate of silver in those cases where the resistance of the mucous membrane is greater, and especially in cases of posterior urithritis, the results were much more favorable than they were from the use of the organic silver salts. This was particularly true of gonorrheal cystitis. As to the comparison between the results obtained by the instillation of nitrate of silver and the use of the organic silver compound, he thought nitrate of silver was far preferable to the others. He looked upon it as being due to the one fact which must not be left out of consideration, namely, the mucous membrane of the bladder was non-absorptive, the exfoliation, which was induced by contact of the drug with the upper layers of the mucosa, was greater, and inasmuch as the penetration of the gonococci was not so great, for that reason, the nitrate of silver was preferable, and followed by much better results. In conditions of the urethra, where there was absorption probably, with a tendency toward infiltration into the submucosa, pressure and other methods were preferable. Referring to the remarks of Dr. Turck in regard to tension, as far as the bladder was concerned, he stated that practically the reverse applied to what it did in the urethra, and the use of nitrate of silver and of the organic silver salts was distinct when applied to the bladder or when used in the urethra.

Epithelial Metaplasia in the Stomach.—Dr. Gustav Fütterer read a paper on this subject, and gave a demonstration. Metaplasia properly so-called means metamorphosis of well differentiated cell structure into another equally well differentiated type. Pseudo- metaplasia designates changes of form due to mechanical conditions, but not of type. Change, for instance, of cylindrical epithelial cells into squamous epithelial cells, with all their characteristics (prickle cells, concentric arrangement and hornification) constitutes genuine metaplasia. Cylindric epithelial cells in a cyst flattened by pressure of the cyst contents retain the character of cylindric epithelial cells, and are instances, therefore, of pseudo-metaplasia. The terms anaplasia of Hansemann and cataplasia of Benecke designate a loss of differentiation, with increased power of proliferation. Physiologic metaplasia occurs in the stomach of the edentata (bradypus, halmaturus and manis), and in the stomach of the oviparous echidna; all masticate with their stomach, which plays the part of the crop in birds. Physiologic metaplasia has been found in the cat's trachea, which in fetal and young cats is lined with cylindric epithelium, while in the adult squamous epithelium is found in a certain spot of the trachea. Genuine epithelial metaplasias have been observed in the nose, on the tonsils, in the larynx, trachea, in bronchial tubes, in the lung cavity, in the middle ear, gall-bladder, renal pelvis, ureters, bladder, urethra, uterus, vagina and rectum. The literature, particularly of gall-bladder and genito-urinary carcinoma, demonstrated the close relationship between metaplasia and development of carcinoma. The only case of metaplasia in the digestive tract, reported is that of Bohm. Bohm reported a cancroid originating from the rectal mucosa, with an epithelial lining like that of the epidermis. Dr. Fütterer made 92 experiments on rabbits; an inch square of the mucous membrane and mucosa muscularis of the pyloric end was removed. Two instances of metaplasia were found in December, 1903, and in March, 1904. Examination in the first case revealed that the artificial defect was covered with mucous membrane differing from the rest in hardness and thickness. In the middle, thereof a column of striated squamous epithelium branching deeply into the muscularis almost reaching the serosa was revealed by the microscope. The squamous epithelial nature of this column was indubitable. Hornification of the parts near the mucosa was shown by Gram's method. The origin of the squamous epithelium was plainly traceable to a very few (two to four) glands of mucosa. The growth pressure of this column was evident by its invagination of the muscularis, which was pushed through the stomach muscular wall almost to the serosa, without perforation. In this case the squamous epithelium indubitably originated from epithelial cells of mucosa glands, and not from an aberrant germinal deposit. The squamous epithelium was found in the center of the mucosa covering the artificial defect. No squamous cells were found in the surroundings.

Dr. Emil Ries said it was hard for him to conceive why there should be so much difference of opinion regarding metaplasia because embryologically there was no question about such a thing taking place right along normally. He could not see why cells which had such abilities during embryological development should not have such abilities later in life. Ordinarily, defects of epithelium were covered over with the same epithelium that had been there before, with restrictions and limitations. In covering over defects in the uterus, as, for instance, on the placental site after labor, the cells which grew over and covered the defect were ultimately typical columnar epithelial cells. But some research

which the author undertook years ago and which he said had been confirmed in an exhaustive paper by Wormser recently, had demonstrated various kinds of epithelial cells which markedly deviated from the columnar type. Ultimately, however, they returned to the columnar type; through successive phases of metaplasia these cells returned to the normal condition of the surrounding epithelium. The question of metaplasia in organs apart from the question of tumor formation had been particularly interesting to the gynecologist, because of the formation of erosions on the vaginal portion, which had been a much mooted question during many years.

He explained that on the cervix there occurred the formation of columnar epithelium in places where ordinarily stratified epithelium was present. This had been observed repeatedly to occur in islands, so that one could not say that the columnar epithelium from the inside of the uterus had grown out on the vaginal portion and had formed columnar epithelium there, but islands of columnar epithelium were found on the vaginal portion surrounded by stratified epithelium all around. There was no direct connection between the columnar epithelium on the inside of the uterus, and the columnar epithelium in the erosion. It had been said that in these cases we had to deal with remnants of the embryonic columnar epithelium which lined Müller's duct, the rest of the vaginal portion being covered with stratified epithelium, but a few islands had remained over. Under the leadership of Carl Ruge, it was asserted that columnar epithelium forms on stratified epithelium by the process of throwing off all layers except the basal layer, which continued to grow as columnar epithelium. But this would appear hard to prove because the only known function of the basal layer of stratified epithelium was to produce numerous layers different from columnar epithelium. If one scraped off any of the skin surface, and left the basal layer, there would be seen a new formation of stratified epithelium. In this erosion we had a type of metaplasia which had been observed very many times, and on which some experiments had been carried out, particularly with pyroligneous acid, which had been used in the treatment of erosions. If one poured into the speculum pyroligneous acid, allowed it to remain a short time, then removed it, after some few treatments the red color of the surface due to the columnar epithelium became a normally pale pink color. The speaker had seen this in many cases. Cases had been recorded where this experimentation had been carried so far that microscopic sections of the tissues were made before the pyroligneous acid had been applied, and again afterwards, showing that stratified epithelium had formed over these places.

It seemed to the speaker that we were too much limited by the methods of investigation which had thus far been employed, that the chemical side had been left out entirely. Observers had examined these cases histologically and morphologically to the limit; they had built theory after theory on morphological and histological bases, leaving out of consideration the possible chemical influences toward the investigation of which the natural processes ought to have led long before. He was referring now to those cases of metaplasia of organs or tumors which were originally covered with columnar epithelium, and in their continued growth became covered with stratified epithelium. He had removed a few weeks ago a polypus of the uterus from the inside of the uterus, the pedicle of which was attached to the inside of the uterus, so that he felt certain that originally the polypus must have been covered with columnar epithelium. He had found the apex of the polypus covered with stratified epithelium investing completely the part that was hanging out of the vagina exposed to the air. He had made the same observation on hemorrhoidal tumors coming out of the rectum, and hanging out of the anus. One could frequently make a diagnosis of cornification of hemorrhoids macroscopically, because on the tip of the hemorrhoid one could see a white spot, whereas the basal part of the hemorrhoid, the pedicle, was pink. He said there was another way in which stratified epithelium developed on organs where it was not originally found. He had removed a patent thyro-glossal duct. The duct had an opening on the outside where the columnar epithelium came in contact with the stratified epithelium. In this duct he was enabled to follow up the stratified epithelium with horny layers near the skin, to about the length of two centimeters into the duct. This was the same as Dr. Fütterer had mentioned in abscesses. Here there were influences about columnar epithelium which were not usually present, that is, exposure either to the air, or secretions which did not usually surround the epithelium. Taking the case of polypus projecting into the vagina, it was surrounded by the sour vaginal secretion, whereas the secretion inside the uterus was not sour. If a polypus projected more, there was exposure to air. There were processes of disease which sometimes influenced and favored the formation of stratified epithelium. For instance, he had found stratified epithelium in the vas deferens which was covered throughout with columnar epithelium in a case of tuberculosis of the vas deferens and seminal vesicles.

Dr. Fütterer said that Ziegler had found the same thing in tuberculosis of the urinary tract.

Dr. Ries stated that his remarks had reference to the vas deferens; he did not know about the urinary tract. With reference to ozena, mentioned by the essayist, in the cases of stratified epithelium in the body of the uterus, which the speaker had seen, they were also characterized and distinguished by a pronounced fetor. This observation had been made repeatedly, that where the horny epithelium was exposed to infection, it favored the formation of a disagreeable odor, probably because of the disintegration of the horny material. In carcinoma of the uterus, where stratified epithelium was found in the body of the uterus, he had found in the lymphatics belonging to the uterus, which were removed at the operation, glandular ducts which had since been the bone of contention among gynecologists who had been examining these glands microscopically. To explain such ducts, it might be said that the carcinoma of the uterus originated in the glands; that it had made glandular metastases in lymph nodes; these metastases looked like tubular glands, whereas in the uterus itself they had progressed to a different formation, so there would be metaplasia in the uterus and the original type of epithelium in the lymph nodes. The question had become more complicated recently, since it had been found that such glandular ducts in the lymph nodes might be caused by simple inflammatory processes.

The question of metaplasia arose again with regard to stratified epithelial carcinomas, many of them with horny products of the uterus. Quite recently he had seen a case of stratified epithelium carcinoma of the body of the uterus in which that diagnosis had been made and on careful examination he thought it was a carcinoma, originating in the columnar epithelium in the uterus, with considerable metaplasia, where the epithelial cells piled up and coalesced, showing many changes of growth that carcinomatous cells were liable to show. It was hard sometimes to say whether a

uterine carcinoma was stratified epithelial carcinoma originally, or stratified from misplaced epithelium, or whether it was ordinary columnar epithelial carcinoma with metaplasia. He had seen carcinoma of the vaginal portion involving the wall of the uterus, leaving the cavity of the uterus entirely free, but the whole cavity was lined with stratified epithelium, not connected at all with the stratified epithelial carcinoma in the wall.

He had observed metaplasia in the uterus in two cases, commonly called ichthyosis uteri. One of them was a woman over fifty years of age, upon whom he operated and extirpated the uterus. He made one curettement and found stratified epithelium. He found no pegs of epithelium going down deep, but the foul-smelling discharge and hemorrhages continued, so that he extirpated the uterus. He found stratified epithelium in the uterus in a case of puerperal infection in a young woman, not extending very high up, but reaching above the internal os. He had found metaplasia in the tube, particularly in tuberculosis, with distinct stratified epithelium. With all these possibilities, he thought it was going too far to assume that every patch of stratified epithelium surrounded by columnar epithelium, or columnar epithelium surrounded by stratified epithelium, must be an aberrant embryonal remnant. He thought the profession were not considering sufficiently the inherent abilities of the cells, and experimentation of the kind carried out by Dr. Fütterer, which would lead to final results, was very much needed. There were many other questions that naturally came up in connection with metaplasia, but the author simply desired to conclude by congratulating Dr. Fütterer on his interesting findings.

Dr. Benton B. Turck stated that when he was a student in Berlin he saw a very interesting case in the nose and throat clinic of Professor Fraenkel, of pachyderma of the vocal cord, the diagnosis having been confirmed by the Professor himself. The patient was a woman who had had frequent injections of iodine and of weak nitrate of silver solutions into the larynx some time before, and the question was raised whether this had not a good deal to do with the origin of the pachyderma of the cord. The woman was markedly anemic, which point was also brought out as a contributing effect, the anemia causing this pachyderma. But the work done by Dr. Fütterer showed that there was a trauma produced first, and in the center of this growth metaplasia occurred. One was almost compelled to accept the findings of Dr. Fütterer as a true metaplasia. In this case I report of pachyderma of the vocal cord chemical trauma undoubtedly played the important rôle. It was supposed to have been the starting-point of the pachyderma in the presence of anemia. One realizes how variable clinical conditions might be, but in the work of Dr. Fütterer one had the absolute experimental proof in the removal of a section, showing the ingrowing of normal glandular tissue and springing almost spontaneously from the center of this was the development of metaplasia.

Dr Fütterer, in closing the discussion, said that the influence of air, as mentioned by Dr. Ries, was a very important factor. In the case he had mentioned of Pollack, there were metastases from cylindrical epithelial carcinoma of the stomach, with squamous epithelial metastases in the lung. He (Pollack) also spoke of the influence of air favoring such changes. Dr. Fütterer thought friction had a great deal to do with the formation of this metaplasia in the most prominent part of the stomach. The mucous membrane was very much thickened and prominent, and there must have been considerable friction between those parts and the food.

OBSTETRICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, April 7, 1904.

The President, Dr. R. C. Norris, in the Chair.

(Continued from Page 432.)

New Modification of Operative Procedure for Retroflexion of the Uterus.—The author of this paper is Dr. E. E. Montgomery; it was read by Dr. John M. Fisher. This is a modification of the operation devised by Ferguson, of Chicago, but to the author's view his method comes nearer securing the desired result than any other he has yet selected. The writer condemns the operation of extraperitoneal shortening of the round ligaments or even the operation of Goldspohn. The method described by the author is one that is very readily performed through a single incision. It affords splendid opportunity for examining and treating the diseased conditions in the pelvis, and gives a fair measure of assurance of the retention of the uteras anteposed. Moreover, it is an operation which uses the natural forces of the uterus and does not add additional band of adhesions within the peritoneal cavity which may be a source of danger to the patient the remainder of her life, as does the operation of ventrosuspension. Furthermore, in the procreating women there is no positive assurance that the band formed in ventrosuspension will not be a source of distress and danger during the progress of her gestation. Besides, it also becomes a source of danger from loops of intestine slipping between it and the fixed uterus becoming strangulated. The author then describes the operation devised by Gilliam and Ferguson, which consists in making the median abdominal incision and drawing and securing the round ligaments through stab wounds in the recti muscle. Then the peritoneum external to the round ligaments is gathered together with a pursestring-like suture and tied. This closes completely the space between the round ligaments and the uterus, therefore prevents the intestine slipping between them. The author's modification of this operation is as follows: The abdomen is opened by median incision. The round ligament is picked up 1½ inches from the cornua of the uterus and a ligature is passed beneath it. Both ends of this ligature are carried by a Deschamps needle through an opening in the peritoneum anterior to the round ligament, to the parietal surface and beneath the parietal peritoneum to a point about the outer margin of the rectus muscle, where it is carried through the peritoneum, muscle and aponeurosis. The ligament on the opposite side is treated in a similar manner. The projecting loops of the ligaments are fastened by sutures to the aponeurosis, the final ones being passed in such a way as to decrease the size of the opening through which the loop was brought. The advantages he claims for this operation are as follows: The womb is maintained in an anterior position; it affords mobility to the organ; it introduces no adhesions nor extraneous material within the abdominal cavity and yet affords structures which will undergo hypertrophy and involution should the woman become pregnant. Moreover, it is of advantage in cases in which there is a tendency to prolapse of the ovary and tube as the relation of the retracted broad ligament to these organs forms a shelf upon which they are more likely to rest. He claims that it is also of service in cases of femoral hernia in that it decreases the directness of the pressure of the intestines on the femoral opening.

Dr. B. C. Hirst, in discussing Dr. Montgomery's second paper, remarked that his experience shows a vast majority of tubal pregnancies bleeding in this way as a tubal abortion, a proportion of nine out of ten at least.

Recent histological examinations explain why this is so. As has been said, the syncytium of the chorion villi or trophoblast eat into the blood vessels of the tubal mucosa. The bleeding comes from the inner wall of the tube, the blood is effused into the lumen of the tube and it has obviously escaped into the abdominal cavity from the abdominal ostium of the tube. In regard to the so-called rupture of the tube in tubal pregnancy; in looking over his whole collection of 68 specimens removed by operation, he doubts if he has a single case in which there has been an actual rupture of the tube in tubal pregnancy from distension. By a process of erosion, the syncytium eats its way to the peritoneal coat, which may then rupture or more likely is eroded like the rest of the tubal wall.

Dr. F. H. Maier, in discussing Dr. Montgomery's third paper, said that he had seen this operation performed quite a number of times, and it is surprising with what ease it is done and in what little time. As Dr. Fisher says, it is simply grasping the round ligament, throwing a ligature around it, making an opening in the peritoneum and carrying it subperitoneally to a point in the lower part of the rectus muscle parallel to the abdominal wound. It can be done almost as quickly as a ventrosuspension. The obstetrician knows that the round ligament and the peritoneum in time, even if they are somewhat distorted and bunched up, will gradually reassert themselves, as is seen in the changes that occur incident to pregnancy. It has distinct advantages over the Gilliam-Ferguson operation, in which, so far as Dr. Maier has seen of that procedure, the greatest trouble is in closing off the vestico-uterine pouch so that there will be no pressing of the intestines around the ligaments when they are drawn up into the lower recti incisions. It is possible to get nearer to the bladder and the peritoneum is bunched more than in this procedure of Dr. Montgomery. In this subperitoneal method there is no secondary suturing and no false ligaments in the peritoneal cavity to predispose to ileus. In displacements of long standing the tubes and ovaries are prolapsed with elongation. Many of these cases need not only suspension of the uterus but of the ovaries as well, and this operation is of advantage in such cases. Of course, as Dr. Montgomery says, it requires time to ascertain the results. It should not be judged hastily. In the Gilliam-Ferguson operation a good many patients returned, complaining of distress in the bladder. This might be due to the intrapelvic peritoneal suturing. Montgomery's method obviates that difficulty and in many ways is a most advantageous procedure.

Dr. P. Brooke Bland said he had no further remarks to make on tubal menstruation or on uterine hemorrhage. He does believe that this operation, devised by Dr. Montgomery, has distinct advantages. The particular advantage is that one uses the strong portion of the round ligaments. It is the only operation upon the ligaments that has this value. In the other operations one utilizes the portions of the round ligaments just as they leave the peritoneal cavity and they are very thin and weak in this region, and, indeed, sometimes cannot be found. Moreover, if shortening of the round ligaments by Alexander's method is contemplated, one has to make two incisions, and being an extraperitoneal operation any diseased condition could not be recognized or treated. Then, too, one may have sloughing of the round ligaments as they leave the abdominal cavity. These may then fall back and carry infectious material with them into the peritoneal cavity. Dr. Bland believes that by this operation, described by Dr. Montgomery, the uterus is successfully retained in a forward position. He does not feel that any operation on the outer portion of the round ligaments will maintain a chronically retrodisplaced uterus in an ante position for any length of time.

Dr. J. M. Fisher said that unfortunately patients are lost sight of after operation. It is difficult, therefore, to determine the value of any given procedure for the restoration of the uterus to its normal position. The question after all is, whether a displaced uterus, in a given case, from a clinical standpoint, is responsible for prevailing symptoms. There is no doubt in his mind that very many never give rise to symptoms, so that, even if the uterus is replaced, there is no change in the condition of the patient. For example, a patient was sent to the Jefferson Hospital to-day suffering from Jacksonian epilepsy. The family physician had found a backward displacement of the uterus and attributed the epilepsy to this condition. The displacement was easily corrected bimanually, and it was quite evident that the epilepsy bore no relation to the displacement. Dr. Fisher has seen most of the procedures that are practised for the correction of backward displacements of the uterus, and this operation, done by Dr. Montgomery, had impressed him very favorably. He has had a number of these operations at the Jefferson. He personally had experience in one case, but the operation was not performed with the same ease as Dr. Montgomery does it now; but Dr. Fisher is sure that after one has mastered the technic it can be done expeditiously. As Dr. Bland has said, the best part of the round ligament is used for the purpose. There are no raw surfaces left in the abdomen after completing the operation. The buttonhole opening in the broad ligament is closed by the round ligament and after this has been fixed to the fascia of the rectus, the anatomical relation of the uterus to surrounding structures is practically that of the organ under normal conditions.

Dr. Norris asked how much puckering there was of the broad ligament after the round ligament has been drawn through and out of the abdominal wall.

Dr. Fisher said that there is some shortening of the broad ligament. As the round ligament is drawn through its anterior leaflet it has some influence upon the tube and may bring about a flexed condition of this structure. As Dr. Montgomery has said, when there is a prolapsed condition of the ovaries and tubes it brings these structures into more favorable positions. A shelf is formed on the posterior aspect of the broad ligament on which the ovary rests. Dr. Fisher has not seen any of the patients after the operation, and is therefore unable to judge of the permanency of the results, but his present impression is that it presents very distinct advantages over every other form of round ligament operation.

Dr. Barton Cooke Hirst made these exhibits: (1) Ehrenfest's Pelvimeter; (2) Schatz's Metranoicter with Modification; (3) A Peculiar Neoplasm in the Puerperal Uterus, Probably of Inflammatory Origin; (4) A Fibroma of the Ovary Completely Calcified; (5) A Report of Experience with the Menge Pessary; (6) Photographs of Vaginal Cyst Stimulating a Cystocele.

(1) Dr. Hirst purchased Ehrenfest's pelvimeter after reading a description of it by its inventor. It is a scientific apparatus enabling one to do what was heretofore impossible in pelvimetry; to draw a diagram of the pelvic shape and size on a sheet of paper outside the woman's body. It gives a graphic representation of the size and shape of any pelvis that one desires to measure. One is not only able to take the anteroposterior but the lateral measurement as well. He thinks it is a useful instrument to have in all large lying-in hospitals where this work should be done in the most scien-

tific manner with the aid of an assistant experienced in pelvimetry. It is a difficult instrument to handle on account of the water level which enables one to keep parallel the lines drawn. Unless the lines are kept parallel the marks do not indicate the true size and shape of the pelvic cavity. It would not be practicable in ordinary private practice. With this instrument is another which Ehrenfest calls his kliseometer, an apparatus for measuring the angle of the pelvis. It is much easier to manipulate than the pelvimeter. Its use is only worth while, however, in very important cases of pelvic deformity, like some extreme examples of rachitis or spondylolisthesis. It is not an instrument suited for the every day use of a general physician.

(2) This instrument has interested Dr. Hirst greatly of late. It is called the Schatz's metranoicter. In looking over German literature he finds a disposition to condemn it. My attention was attracted to it by an article in the *Journal of Gynecology and Obstetrics for the British Empire*, in which an English surgeon said he had found it all that the inventor claimed. This influenced me to give it a trial. Dr. Hirst is pleased with it and believes it will prove an indispensable part of the gynecologist's armamentarium. The profession knows that there are many cases in which one would like to palpate the interior of the uterus, and also knows how difficult it often is to do it. Dr. Hirst has frequently tried to make a digital examination of the uterine cavity after using the ordinary branched dilators, but has usually failed. Uterine tents of sponges, laminaria and tupelo do secure very good dilation, but they are so dangerous that their use is scarcely justifiable. With this metranoicter in place twenty-four hours the forefinger can easily be inserted in the fundus. He has used it in thirteen women; in four for diagnostic purposes; in each it was possible to palpate the interior of the uterus with the utmost ease. If there is anything in dilation of the cervix at all, there must be more in this thorough and permanent kind of dilation than in any other that has heretofore been employed. He has used this instrument nine times for dysmenorrhea and sterility, in the cases in which branched dilators had been used, and he is pleased with the result. Some of these cases were the most severe types of dysmenorrhea; they have all been relieved, one or two in quite a remarkable manner. The operation is begun in the ordinary way by using three branched dilators: (1) Baer's modification of Goodell's two-branched dilator; (2) Wathen's heavy dilator; and (3) the four-branched Cleveland dilator. With the Baer instrument he dilates as much as the instrument allows; with the two-branched dilator an inch and a quarter; with the Cleveland, within 10 mm. of the highest capacity of the instrument; then the metranoicter is slipped in and left in the uterine cavity twenty-four hours. Dr. Hirst believes that this method of dilation will have a widespread use. It occurred to him, however, that Schatz's metranoicter might be somewhat improved, and he has had an instrument-maker make a four-branched instrument instead of the two-branched. He has used the modified metranoicter in one case, and at the end of twelve hours had the widest dilation of the cervical canal that he had ever secured by any plan of artificial dilation. He should have been disposed to criticize this instrument by asking whether it did not occasion unendurable pain. Of the thirteen cases in which it was used there was complaint on only two of pain, and these women, hysterical and neurasthenic, would have complained of pain at its very suggestion, so he thinks the profession may consider the method painless. He could not well dispense with this instrument. It enables him to do safely what he has never been able to do before, and it will, he believes, have a wide field of usefulness in practice.

(3) The next exhibit is an illustration of a case which Dr. Hirst thinks must give the profession serious cause for thought. His predicament in this case was one in which any one may find himself occasionally. He was called to see a woman who had been bleeding profusely for four days. She had been delivered at 6½ months, ten days before, and had had several hemorrhages during pregnancy. She was transferred to the hospital in an exsanguine condition. She was brought before the class in a clinic at the University, and served as a text for a lecture upon hemorrhage in the puerperum. The attention of the students was called to its possible causes, including malignant growths, but they were warned to think of the commoner causes first, and of malignancy last of all, as the rarest. On exploring the uterus, however, with curette forceps, in addition to placental fragments, material was removed of a brain-like consistency, such as is obtained from a case of adenocarcinoma. It was submitted to three different pathologists. They all agreed that it was exceedingly suspicious. One made a diagnosis of coritoepithelioma; another concurred, but with some reservation. The third disagreed, but admitted the possibility of malignant growth. They all recommended hysterectomy as a result of their study of the specimens. The uterus was accordingly removed. A neoplasm is shown, not at the placental site, and apparently of an inflammatory nature. It showed round-cell and leucocyte infiltration, with necrosis. There is no infiltration or hyperplasia of cyncytial cells, though the scrapings showed this plainly. It is a question whether it was a localized barrier against an incipient chorio-epithelioma. This case illustrates the difficulties in the diagnosis of chorio-epithelioma, before the disease has advanced to an inoperable stage.

In all cases of retained placental fragments and endometritis after labor, there is likely to be syncytial hyperplasia and infiltration of the myometrium by syncytial cells. How can one tell when the physiological limit has been passed and epithelial overgrowth has become malignant? When a large, vascular, friable mass has developed in utero, breaking down under the finger, and exhibiting a vast overgrowth of the syncytium, the diagnosis is plain enough, but how to make it in the earliest stage of the disease, he confesses he is at a loss; and yet, in no variety of malignant growths in the uterus is an early diagnosis so desirable. The mistake must occasionally be made, in the present stage of our knowledge of doing hysterectomy for what is regarded to be a malignant growth, when malignancy is not yet clearly established. The condition is a rare one and the dilemma does not often confront the profession, but when it does, he thinks one may feel puzzled and must acknowledge that a mistake is liable to be made. The patient in this case made a perfect recovery.

(4) The next specimen is an interesting one, of fibroma of the ovary. It has undergone complete calcification, and has the appearance as well as the feel of a cobblestone. The diagnosis before operation was calcification of a superitoneal fibroma. There was no ascites. It is an interesting question, whether calcification prevents ascites or not. The woman had suffered from the mechanical "insults" to surrounding structures from this freely mobile, stony-hard tumor in the abdomen. She made a good recovery.

(5) The next exhibit is Menge's pessary for prolapsus uteri. Certain women cannot or will not be operated on for prolapsus, and the task is imposed on the profession of keeping up the utera by some mechanical support. Dr. Hirst supposes, like most of the mem-

bers, he has tried every device in the instrument-makers' shops with more or less dissatisfaction, until he used this pessary of Menge's, described in the *Centralblat für Gynekologie*, a few months ago. He has had an opportunity, lately, to use the support with unlooked-for good results in some difficult cases. One woman had an enormous total prolapse of the uterus with severe pruritis vulvæ, the result of diabetes mellitus. She had more than five per cent. of sugar in the urine and was over sixty-five years of age. An operation would naturally have been unjustifiable. For the first time in several years the uterus remains at a normal level within the pelvis, the woman is comfortable and her pruritis is nearly cured. In short, the pessary has been a perfect success. In another case of total prolapse the woman had been operated on twice by other surgeons with complete failure. She positively declined another operation. In her case also the result with Menge's pessary has been satisfactory. The principle of the pessary is that it is kept in a transverse position in the vagina by the projection below somewhat on the principle of the fin keel of a boat. Several devices with this end in view have been proposed, but Dr. Hirst has found none so satisfactory as Menge's. The patient should be instructed to remove the pessary every night or every other night and to reinsert it in the morning. Its removal is facilitated by the detachment of the projection, which should be joined to the ring before the instrument is reinserted. Unless the pessary is removed at frequent intervals it has the disadvantage of all ring pessaries; it irritates the vaginal walls and causes ultimately extensive ulceration.

AMERICAN PROCTOLOGIC SOCIETY.

Sixth Annual Meeting at Atlantic City, June 8 and 9, 1904.

The President, Wm. M. Beach, M.D., of Pittsburg, in the Chair.

Things of Specialism and of This Society That Make for Optimism.—This was the text of the presidential address, and was a thoughtful and well-considered argument in support of specialism in general and of proctology in particular. He pointed out that the favorable recognition which had been accorded this specialty was largely due to this Society, and that as a direct result, though only six years old, the advertising charlatan had practically disappeared. The high type of men composing the membership was alluded to, and the continued exercise of careful circumspection in admitting new members advocated.

Surgical Treatment of Prolapse of the Rectum.—This was the subject of remarks by Dr. J. M. Mathews, of Louisville, in which he reported excellent results from drawing up the colon and suturing it to the abdominal wall. He had resorted to the method in a number of cases and believed the operation, colopexy, worthy of more general adoption.

Treatment of Pruritus Ani With the Roentgen Rays.—This subject was discussed by Dr. J. R. Pennington, of Chicago. From an experience covering a period of several years he had reached the conclusion that the X-rays were a valuable therapeutic measure in certain obstinate cases in which no cause for the pruritus is discoverable, and in which the secondary changes in the parts affected are most marked. He had succeeded in a number of instances in effecting a cure after every other form of treatment had failed.

The Present Status of the Treatment of Cancer of the Rectum.—This was the title of a paper by Dr. Lewis H. Adler, of Philadelphia. He considered four methods of treatment: (1) the X-rays, (2) radium, (3) extirpation, (4) colostomy. Speaking from his own experience he condemned both the first two mentioned, the X-rays, as aggravating the disease and apparently hastening death, the radium as being non-effective. With reference to extirpation he said that cancer of the rectum, at the stage usually discovered by the surgeon, is far less amenable to operative treatment than cancer occurring elsewhere; that extirpation, even when thorough, is followed by cure in only a small percentage of cases, owing frequently to prior metastasies; that the danger attending excision of the growths situated above the lower two or three inches is very great; and that the results as to freedom from pain in successful cases are usually far from satisfactory. He personally had been unable to advise excision in more than five per cent. of cases. Colostomy the author regarded a valuable palliative operation, the patient living in comparative comfort an average of three to four years. Personally he does not advise colostomy as early now as formerly.

The Flexible Rectal Tube.—This instrument was condemned by Dr. S. T. Earle, of Baltimore, as impracticable and of limited utility. His investigations of the subject had led him to conclude that as ordinarily employed by nurse or patient, the instrument curls upon itself in the lower rectal chamber and very rarely enters into the sigmoid. This difficulty may be overcome in a measure by attaching nozzle of fountain syringe to tube and allowing enough water to enter the bowel to distend it in front of advancing tube. In inexpert hands the instrument is capable of harm and except in the hands of the physician himself, the writer thought it should give place to the ordinary anema nozzle and elevation of patient's hips, by which method the same results can generally be obtained.

Poly-adenomata of the Rectum.—Dr. G. B. Evans, Dayton, O., presented this paper, in which he referred to the comparative varity of the disease and emphasized the importance of early and complete removal of the tumors, their tendency to undergo malignant changes being the chief danger. With the more general employment of instruments of precision in rectal examinations the writer predicted that polypi would be more frequently encountered in future.

Some Observations on the Treatment of Rectal Diseases.—Dr. W. L. Dickinson, of Saginaw, Mich., spoke of the great prominence diseases of the rectum had gained in the past 25 years. When he was a student the entire subject was disposed of in one lecture by the professor of surgery, "piles," being the only disease alluded to. Improvements in the office treatment of these conditions were discussed at some length, the author showing that it is possible in a large number of cases to do good, thorough work without general anesthesia and confinement of patient to bed.

Rectal Valves with Report of Operative Cases.—This was the title of an essay by Dr. L. J. Krouse, of Cincinnati. The author discussed the indications for valvotomy and endorsed it as a justifiable operation in properly selected cases, reporting a series of cases in which great and permanent benefit had followed its performance.

Treatment of Simple Rectal Fistula by Excision and Suture Without Cutting the External Sphincter Muscle.—Dr. Howard A. Kelly, of Baltimore, read this paper, in which he described the technic of an operation devised by himself and successfully employed in a number of cases. The procedure is applicable only when the fistula is simple and direct and consists of dissecting out the tract, beginning at the external opening. The rectal orifice is then carefully excised through the

wound so as to make a transverse opening parallel to the sphincter fibers. The wound is then closed by interrupted silkworm-gut or silver wire sutures, taking care to draw the circular fibers together above and below the rectal orifice.

Sterile Water Anesthesia in the Radical Treatment of Rectal Diseases.—This was the subject of a paper by Dr. S. G. Gant, of New York. In the author's opinion the hospital, general anesthesia, and confinement to bed constituted a routine, which, as applied to rectal diseases, was both unnecessary and unjustifiable in most instances. For several years he had been seeking means to overcome these disadvantages. After trying various agents for producing local anesthesia he had abandoned them one after another because of toxic effects, hemorrhage, pain or non-effectiveness. Finally he concluded that the anesthetic effect of these agents was due rather to pressure than to the drugs employed and was led to try sterile water alone. This gave him the happiest results. He reported 320 cases operated upon by this method, which included practically every variety of rectal disease amenable to operative treatment. The results had been so gratifying that he heartily recommended that the method be given a trial by other surgeons.

Papers by Dr. Leon Strauss, of St. Louis, and Dr. A. Tierlinck, of Gand, Belgium, in the absence of the authors, were read by title.

Officers.—The following officers were elected, after which the Society adjourned to meet in Pittsburg, May, 1905: President, Dr. J. R. Pennington, Chicago; Vice-President, Dr. L. H. Adler, Philadelphia; Secretary-Treasurer, Dr. A. B. Cooke, Nashville. Executive Council, Dr. W. M. Beach, Pittsburg; Dr. S. G. Gant, New York, and Dr. G. B. Evans, Dayton.

BRITISH MEDICAL ASSOCIATION.[1]

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

(Continued from Page 427.)

SECTION ON TROPICAL DISEASES.

Some Fallacies in Finalities.—This was the title of the address of the President of the section, Brig.-Surg. Alexander Crombie. He spoke of the modifications brought about in the investigations of many tropical diseases and pointed out the fallacies of many currently adopted opinions.

Malarial Fevers.—The criticisms of clinicians have, on the whole, been favorable to the belief in the occurrence in hot climates of fevers of a continued type other than typhoid and malarial remittents, but the opinions of our laboratory confrères have been almost uncompromisingly opposed to it. In a conversation he had last year at Liverpool, one expressed himself as having found no evidence of their existence, and Leonard Rogers, in a paper which he read before the Medico-Chirurgical Society in May last year, was still more emphatic. Quite recently, however, opinions have been expressed more in unison with clinical observation, and he thought it would be profitable to examine the grounds on which the laboratory opposition rested. Notwithstanding official returns to the contrary, which show an overwhelming majority of admissions for malarial fevers, "ague" is not the most prevalent type of fever in any of the parts of India where he practised his profession. The commonest type of fever is what he has elsewhere called a "single-paroxysm fever." The paroxysm may be of a few hours or a few days' duration, but it is a single paroxysm, and has no tendency to recur. If it lasts a few hours it is called "ephemeral fever," if a day or two it is called "febricula," if several days it is known as "simple continued fever." These attacks of fever give no clinical evidence of periodicity such as is caused by the life-cycle of a parasite renewing itself at frequent intervals in the blood. He failed to find the malarial parasite in such cases, and they recovered without quinine. But since his paper was written these cases of a single pyrexial paroxysm have, nevertheless, been by many regarded as essentially malarial in their nature. Rogers sounds no uncertain note on this subject. He says they are all malarial, as shown by a microscopical examination of the blood and an analysis of the symptoms. Several of his cases, he says, had a typical tertian character, each of them showed the mononuclear increase of malaria, and they were each cured by quinine. But he does not say that he found the malarial parasite present in any of them; neither is the fact that they each recovered after quinine evidence that they were malarial in nature, because they are essentially fevers of a single pyrexial paroxysm, and recover equally well without quinine as with it. There remains the one evidence of the mononuclear increase, but as this can no longer be held to be conclusive of recent malarial infection, nothing remains to support the contention that these cases of fever of a single paroxysm are all of a malarial nature. Quite recently James wrote as follows: "It is certain that other fevers than malaria are often returned under the term 'ague.' In order to ascertain what proportion of the admissions were really due to malaria, a number of men admitted for this disease were examined in October, 1901, by Dr. Christophers" (that is, in Mian Mir, the most malarious cantonment in India, and at the most malarious season) "and in 40 per cent. of these malarial parasites were found. In the same way he examined a number of men admitted or detained for ague during September, 1902, before any quinine had been administered to them, and found malarial parasites in 45 per cent. of the cases examined. During this month, also, through the courtesy of Major Gordon Hall, R.A.M.C., no quinine was administered as medicine to a number of cases in which he had not found parasites. All of them recovered in from one to three days, without any quinine treatment, and from this and the fact that several examinations in each case failed to show the presence of parasites, he concluded that these cases of fever were not due to malaria, though usually entered as such in the returns." Similarly, writing in Bombay in February, 1904, Mr. Arthur Powell bears testimony to the same effect. Thus he says: "Slight fever, for which no specific cause has been detected by me, is not uncommon in Europeans who have been a short time in the country. He had failed to find any malarial parasites in many such cases, and to test the theory that these are malarial, with a sparse infection, he had withheld quinine to see if a relapse would occur; no such recurrence has taken place."

One can therefore conclude that a large proportion of the febrile attacks of hot climates must still be included in the terms "febricula" and "simple continued fever," and that the evidence that they are all malarial is inadmissible. He then took a form of fever which he had called "non-malarial remittent." This was a fever of considerable severity, duration and mortality, lasting on an average six weeks, if not fatal at an earlier period. He had never been able to find malarial parasites in such patients, and quinine sometimes pushed to the extreme dosage of 90 gr. a day (6 grams) was not only ineffectual, but obviously harmful. In the discussion that followed the reading of his paper at the Edinburgh

1 From advance sheets of the *British Medical Journal*, by courtesy to the editors.

meeting of this Association, it was contended by the late Dr. Hughes, and by Dr. Edmonston Charles, who was well acquainted with this form of fever in Calcutta, and who had also made a study of Malta fever, that this "non-malarial remittent" was in reality Mediterranean fever. Dr. Crombie had seen some twenty cases of Malta fever in the wards of the General Hospital, Calcutta, landed from a man-of-war which had come straight from the Mediterranean, and their clinical picture was different from his patients. His confidence was somewhat shaken when it was announced about the time of the Edinburgh meeting that the sedimentation test for Malta fever had been successfully applied to cases of fever from Dugshai and elsewhere in Northern India, and even in cases from Calcutta; and a short time ago it was announced that agglutination occurred in every specimen of blood sent from fever cases in Assam, and that, in fact, kala-azar was epidemic Malta fever—a theory which has now been abandoned. What, then, is this form of fever which he described as occurring in India under the name of "non-malarial remittent?" Rogers, in his paper, came to the conclusion that it did not exist, although at the beginning of his investigations he believed in its existence, and was stimulated to try to find its true cause. He was driven to the conclusion as the result of his study of continued and remittent fever, by modern blood tests, that only two forms of fever exist in Lower Bengal, at any rate, of long duration, namely, typhoid and malarial remittents. A considerable portion of the cases could be distinguished, he said, by purely clinical methods, and the remainder by the serum test or by the differential leucocyte count, in all but a very few cases. The so-called "non-malarial remittent" in natives was, according to him, shown by the serum test to be nothing but typhoid fever. Unfortunately for this pronouncement, the ink with which it was written was hardly dry when Leishman made the discovery of the bodies, now associated with his name, in the spleens of cases of fever from Dum-dum which were neither malarial nor typhoid, and cases of identical character associated neither with malaria nor typhoid have now been reported from Sylhet, from China, from Tunis, from Egypt and the Soudan, from Madras, where they form 7 per cent. of the total native admissions to hospital, and kala-azar, which Rogers strove to prove to be a contagious form of malarial fever, is now shown to be a form of "non-malarial remittent" associated with the same bodies.

He said he did not bring these points out as a parade of superior clinical sagacity. He made no such claim, for two reasons: first, because the knowledge that has from time to time to deal with cases which could be classed neither with typhoid nor malarial fevers was common property among clinicians of his day, before "modern methods" cast a doubt on the existence of what has habitually been called "non-malarial remittent," and it was only his fortune to voice this conviction; and secondly, because the clinical character of the cases associated with Leishman's bodies is very often apparently entirely different from that of the fever which, in his address of 1894, he described under that name. His object was to point out the fallacies which lay in the way of investigators, and turn them aside from the path on which some of them set out with a clear object in view, and which would, if pursued with more imagination and stricter logic, have surely led them to the discovery of the existence of this class of fevers which they have hitherto denied.

The fallacy, he said, was the fallacy of finality, the fallacy that every step made in advance is final and that every fact of medicine must be brought into line with it for the reason that there is nothing beyond. It is a fallacy which has mired the progress of medicine ever since it started on its journey. To go no further back than the middle of last century, we find that previous to that time there was only one kind of non-malarial fever, and that that was typhus. In vain did clinicians and pathologists point out, and none more clearly than Scriven, of the General Hospital in Calcutta, and Annersley, of Madras, in 1835, that there existed another type of fever of more insidious character and accompanied by ulcerations of the small intestine, which was clinically and pathologically distinct. It was not till fourteen years later, when Jenner's classical labors showed it to European practitioners, that they had ears to hear and eyes to see that the "typhoid" fever of the English, the abdominal typhus of the Continent, was a distinct pathological and clinical entity. But it was thought this step was final: every fever that was not malarial must be either typhus or enteric, and Mediterranean fever had to be included in one or other of these categories, and we accordingly find even Laveran, in the early editions of his great work on *Paludisme*, classifying it in this way, notwithstanding its striking divergence clinically from either malarial or typhoid fevers. Then came Bruce to show us that it was as distinct bacteriologically as it was clinically and pathologically from either. At last the end of everything was reached, and every fever that was not malarial or typhoid was Malta fever, as was maintained at the Edinburgh meeting, and in proof of this opinion came reports of serum tests from Upper India and Assam entirely corroborative of it, and it was clinched by the discovery of the clinical significance of the leucocyte count. Rogers was the great apostle of the leucocyte count, and his whole argument in the paper he read last year was based on the opinion that "by this means alone, in the great majority of cases, a correct diagnosis can be arrived at by the examination of stained blood-films with an ordinary high-power lens." He had arrived at finality; an increase of the percentage of lymphocytes indicated typhoid, and of the large mononuclears, malarial fever. The presence of the malarial parasite was of little comparative importance, and, in fact, he only found it in less than 25 per cent. of the cases he diagnosed as malarial by the differential leucocyte count. Further, he said: "I am far from disparaging the value of this method of investigation, and I use it constantly, but I use it with caution, because it has been found that the presence of an increased percentage of mononuclears is not confined to malarial infection. It has been found in the spotted fever of the Rocky Mountains, in the fever of trypanosomiasis, in black water fever, and in that associated with Leishman's bodies. It has indeed been abandoned by Rogers himself, for in a recent communication he says that 'if the new bodies are not a form of malarial organism, then it is evident that a large mononuclear increase is not diagnostic of malaria, but rather an indication of the presence of a protozoal as opposed to a bacterial invasion of the system,' and his whole argument as to the non-existence of a 'non-malarial remittent' fever crumbles before his own breath. But that is not all. Even if we admit that it is evidence of a protozoal infection, it is not incontrovertible evidence of an active or even recent protozoal infection. The question of the duration of the mononuclear increase after an attack of ague is one which is of the greatest importance in this relationship, and I have evidence that it may continue for a very considerable period. In a case of insomnia which I have now under observation the large mononuclears constituted 24 per cent. of the total leucocytes in October, 1903, and again in July, 1904, although the last

possible malarial infection was at Delagoa Bay in April, 1902, so that, apparently, this phenomenon may continue for over two years, and possibly much longer, and cannot, therefore, be regarded in a malarial country as evidence of present, or even recent, malarial infection, putting aside the consideration that it occurs in other febrile conditions.

Widal Test Not Conclusive.—It may seem hypercritical to apply similar reasoning to the arguments which have been brought forward to prove that this so-called 'non-malarial remittent' is nothing more than typhoid. I require something more than an increased percentage of lymphocytes, or even the Widal reaction, to convince me that enteric is a common fever among natives of Lower Bengal. It has yet to be proved that typhoid is the only fever in which an increased lymphocyte percentage occurs, and until that is done all argument founded on that assumption is a mere begging of the question, irrespective of Rogers' admission that it was absent in one-third of the cases so diagnosed by him. I must also demur to accepting a positive Widal reaction as conclusive of active typhoidal infection in any given case of fever in a native of Bengal. As with the mononuclear increase in malarial, or rather protozoal, infection, so the phenomenon of agglutination may occur under other conditions, and is often of long and indefinite duration. Though it is lost as a rule in a few months after an attack of typhoid, it may persist for twenty-five years, according to Horton Smith, so that any case of fever occurring within an indefinite period after recovery from this fever may give the reaction without any fresh infection by the bacillus of Eberth having occurred. It is even an unjustifiable assumption that a previous attack of typhoid fever is necessary for the manifestation of the reaction in natives of Lower Bengal who give no history of any fever which could be regarded as having been typhoidal. This is a point on which Freyer, of the R.A.M.C., was the first to sound a warning note. I am aware that the dilution he used was too low, and that healthy blood sometimes gives positive evidence of the agglutination in 1 in 12. I am also aware of the negative results obtained by Lamb, of Bombay, who used the sedimentation test, but I think it desirable to put on record those which I obtained in examining the blood of healthy natives of India living in London. I sent specimens of the blood of eleven such natives to Mr. Bokenham, Dr. Klein, and Captain Hayward Pinch of the Polyclinic, as I was in the habit of doing in ordinary clinical work unconnected with this inquiry. In six of these the result was entirely negative, but of these three were over forty years of age, two were natives of the Punjab, and only one was a young Bengali. The remaining five were young natives of Lower Bengal or Assam, studying law or medicine in England. When not otherwise stated the dilution was 1 in 50. Of these two gave a marked reaction in twenty minutes; three gave the reaction slowly, showing many clumps in half-an-hour, two of them giving a marked reaction in dilutions of 1 in 30. In two instances the blood was re-examined after an interval of six months. In one there was 'distinct partial clumping in thirty minutes, better still in one hour in a dilution of 1 in 20' (Klein). In the other there was no sedimentation with a typhoid culture, 'but in a hanging-drop preparation made with the typhoid culture a distinct loss of motility—as contrasted with a control slide—was noticed in three hours and at the end of five and a half hours all movement had ceased, but there was not the slightest attempt at agglutination. This certainly does suggest that the blood contained some substance inimical to the vitality of the typhoid bacillus' (Pinch). None of these young men had a history of fever which could be regarded as indicating recent typhoid infection, and yet there were present in their blood substances which are regarded in ordinary laboratory work as indicative of present or recent typhoid infection, and I think we must therefore accept with reserve the opinion formed on the serum reaction alone, that typhoid fever is a common form of fever in natives of lower Bengal, in the face of these results and the experience of many medical officers who have regarded it as rare, an experience grounded not only on clinical observation, but on necropsy."

In his address of 1894 he said he had spoken of Bastard Typhoid, a continued fever, which ran the course of a mild typhoid, of from three to four weeks' duration, but which had none of the clinical symptoms of that disease. It had been recognized as a peculiar type in all the larger towns of India, where it was known by the local names of "Calcutta fever," "Bombay fever," etc. In the absence of specific evidence that it was no other than typhoid, clinicians declined to give it this name, although they treated it as such. He provisionally called it "urban fever" in 1894, but is now prepared to regard it as a peculiar form of typhoid, and in my paper in the *Encyclopedia Medica* had suggested the alternative name of "Bastard Typhoid." His reasons for advancing it to this category are that in one case which he had an opportunity of examining before he left Calcutta he obtained the Widal reaction, and as this is a fever of Europeans, the same objection does not exist to accepting this evidence as it does in the case of natives. Rogers also states that he found this reaction in every case of continued fever in the wards of the European General Hospital. It would have been more satisfactory if he had sorted the cases clinically, so as to have been able to make it quite clear that his enumeration included cases of this type, for the fact that they conform to the serum reaction of typhoid fever in no way alters the fact that they exist as a distinct clinical type. It has been demonstrated that there are several types of enteric fever, and a form which does not give the serum reaction in any period of its course has been pointed out under the name of "Paratyphoid." And he thought that the distinct clinical type which is so well recognized in India, and which he has called "Bastard Typhoid," ought not to be dismissed because it gives the serum reaction, but its peculiar clinical features rather mark it for more exact research. His experience in connection with the typhoid fever of the South African war, which showed several very distinct deviations from the ordinary classical enteric of the text-books, namely, the often copious eruption, the frequency of thrombosis and of muco-enteritis as a sequela, has led him to think that typhoid fever is generally a mixed infection, the symptoms and severity varying with the amount and quality of the mixture, and it is not impossible that the peculiar type which occurs in the large cities of India may turn out to be a pure infection with Eberth's bacillus, and may thus form the bed-rock on which the more classical cases are built up by additions of other intestinal flora.

(To be Continued.)

Medical Society of the State of New York.—The following have been appointed the Business Committee of the Medical Society of the State of New York, by the President, Dr. H. D. Wey: Dr. Henry Flood, of Elmira; Dr. A. Edward Davis, of New York, and Dr. Leo H. Neuman, of Albany. Those interested in the program of the next annual meeting of the Society, to be held in Albany January 31, February 1 and 2, next, will communicate with them, as they are charged with its preparation.

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ORIGINAL ARTICLES.

AN ANALYTICAL STUDY OF TWENTY-EIGHT CASES OF ARTHRITIS, WITH SPECIAL REFERENCE TO GOUT AND ITS TREATMENT.[1]

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THE prevalence of gout in this country has long been thought to be less than in the British Empire and the European countries in general. But an analytical study of the arthritides, which came under the writer's observation in the second medical service of the City Hospital during the months of November, December and January of this past winter, shows a considerable difference in statistics from those of other observers.

During the period of time just mentioned, 415 patients were admitted to the second medical service. Of these there were twenty-eight cases of arthritis, or six per cent. of the total number; 23 being males and five females. Of the 28 arthritides 12, or 43 per cent., were gout, this being 2.89 per cent. of the total number of cases admitted. Five of these were acute podagra, while the other seven were of the chronic type of the disease. Of the other cases there were five (18 per cent.) of rheumatic arthritis, or 1.2 per cent. of the total admissions, four acute and one chronic; five gonorrheal arthritis, one septic arthritis, one arthritis deformans and two cases of erythromelalgia.

The first thing that impresses one on reading over the foregoing statistics of these 28 cases is the relatively large incidence of gout. One would naturally ask in the face of this, if the diagnoses made were correct, and if the observations made were unaffected by personal bias—one of the greatest sources of error in work of this character. Let us go over the cases of gout a little more in detail and see if our classification is correct. The acute cases of gout were all classic, beginning in the metatarsophalangeal joints of the great toes with swelling, redness and pain which was worse at night, and with a sharp initial fever; all of these symptoms promptly subsided under the administration of colchicum. With these cases there is, of course, no opportunity for mistake in diagnosis, nor would we expect to find it in the acute forms, but it is in the chronic forms where the clinical history of the onset and development of the affection is typical neither of gout nor rheumatism, that we would look to find errors of classification, if any exist. A review of the seven cases of chronic gout will show, with perhaps two exceptions, that there was no possibility of a mistake in diagnosis.

[1] Read before the West End Medical Society, April 30, 1904.

Case III.—Male; patient complained of pain and stiffness in right instep, heel, and ankle. There was no history of injury or strain. The lameness on motion was extreme and incapacitated him for work. A thorough course of salicin had no effect upon the trouble, upon the administration of colchicin the joints promptly improved and the pain, soreness and stiffness disappeared.

Case VI.—Male; patient complained of pain, soreness and stiffness in both knees, both ankles and both feet. The knee joints were thickened, stiff, and with very limited motion. The ankle joints were also thickened and stiff. The metatarsophalangeal joints of both great toes were thickened, stiff and somewhat painful on pressure. Patient improved on colchicin and passive movements.

Case VIII.—Male; patient complained of pain in right knee, both elbows, metacarpal joint of right thumb and metatarsophalangeal joint of great toe. The affected joints were all red, swollen and inflamed. A previous attack one year ago began in the metatarsophalangeal joint of the great toes and came on at night. Patient responded promptly to the administration of colchicin.

Case XVIII.—Male; this case had marked deformity of feet, ankles, knees, hands and elbows from gouty tophi, there were also tophi on the ears. There can be no doubt of the diagnosis in this case.

Case XIX.—Male; the attack began in the phalangeal joints of the third and fourth fingers of the right hand, and the second and third fingers of the left, then involved the left wrist. The affected fingers of both hands were swollen and stiff, the inflammation having subsided. There was also a node on the flexor tendon of the third finger of the left hand with a beginning Dupuytren's contraction. The patient was kept on salicin for two weeks with no effect, but improved very promptly on colchicin.

Case XXV.—Female; patient complained of pain and soreness in metatarsophalangeal joints of both great toes, also in both knees and ankles. The affected joints were swollen, red and tender to touch. There was some crepitation in the knee joints. Attacks would often be precipitated by worry due to domestic trouble. Attack yielded very promptly to colchicin.

Case XXVII.—Female; patient complained of pain and stiffness in both knees and in metacarpophalangeal joint of right thumb. The knee-joints were thickened, swollen and painful, as was also the joint of thumb. There was considerable deposit about the thumb joint. Patient was put on salicin for five days with no effect; on colchicin she was up in four days.

Thus it will be seen that there are only two cases in which there could be the slightest possibility of doubt as to the diagnosis of gout. In *Case III* the pain and stiffness in the ankle, heel and instep began a month previous to admission into the hospital, and gradually grew worse without any inflammation or swelling until the patient was incapacitated. The short duration of the trouble, its insidious development without inflammation, and the fact that it did not respond to salicin, but did to colchicin, seems to show that the process was a gouty one rather than rheumatic. In *Case XIX*, the other one in which there might be doubt, the affection began in the phalangeal joints of both hands. At first it was thought that it might be the beginning of arthritis deformans, but as it subsided without the implication of other joints except the wrist, and was controlled by the administration of colchicin, the diagnosis of gout was made. Assuming that these two cases were not gout we still have in the series of 28 cases of arthritis a percentage of 35.7 of gout and 2.4 per cent. of the total admissions to the service, far more than the frequency usually given to that disease in this country.

Of these twelve cases of gout, ten were in men and two in women.

It is a very difficult matter in tabulating a number of cases in this fashion to know in just what manner to separate the acute from the chronic forms, especially when several of the latter have come under observation during and by reason of an acute exacerbation. In the classification of these cases no definite plan has been followed and the division into acute and chronic gout has been made in a purely arbitrary manner.

Quite as surprising as the high percentage of gout cases in the group of 28, is the relatively small number of cases of rheumatic arthritis. Only 18 per cent. of the total number were in this class, or 1.20 per cent. of the total number of patients admitted. Of these five cases four were acute rheumatic arthritis and only one chronic rheumatism. Indeed, this one was placed in the category of chronic rheumatism out of deference to the opinion of those who believe in the comparative frequency of this condition rather than because it was believed to be in any way rheumatic. This was *Case VII*, male, aged seventy years. This might just as well be called senile gout as chronic rheumatism, inasmuch as there had never been an acute attack of arthritis of any kind, but there had been a progressive stiffness and lameness of the muscles and tendons of the phalanges with no changes in the joint structures, all this being concomitant with senile changes in other parts of the body.

Gonorrheal Arthritis.—This class comprises 18 per cent. of the total number of cases of arthritis, an equal number with rheumatic arthritis. This relatively large number is not altogether surprising when one stops to consider the class of patients at the City Hospital, where these cases were seen. Four of them were in males and one in a female.

Septic Arthritis.—Only one case, 3.5 per cent. of the total number was in this class. This was *Case XXII*, female, whose joint trouble dated back some years to an attack of septicemia following a miscarriage.

Erythromelalgia.—There were two cases of this rather rare disease, and while strictly speaking not an arthritis, the cases so closely resembled a gouty arthritis they were considered as such on admission and for some time afterward.

Doubtful Cases.—Two cases are placed in this category. One of these came in from Bellevue, after the acute attack had subsided. At the time of admission there was a great deal of stiffness and some swelling in both ankles. The patient said the attack had come on ten days previously with great pain, swelling and redness of both ankles and attended with high fever. As the soreness and stiffness increased under administration of salicin but yielded very promptly to colchicin, it was thought there was a reasonable doubt as to its having been rheumatism, so it was classified as doubtful. The second case was one of an intramuscular node in the trapezius, whether of a rheumatic or gouty origin it was impossible to say.

Arthritis Deformans.—There was one case of this kind in a female. In the five cases of acute gouty arthritis the attack began in the metatarsophalangeal joints of the great toes in three, the palangeal joints in one, and the ankle in one. The joints to become ultimately affected were the instep, shoulder and chondrosternal joints in this order of frequency.

In the cases of chronic gouty arthritis the initial attacks began in the ankles in four, in the metatarsophalangeal joints of the great toes in one, in the knees in one, and in the phalangeal joints in one. The joints ultimately affected were the knees, metacarpophalangeal joint of thumb, instep, shoulders, elbows and wrists in this order of frequency.

In the four cases of acute rheumatic arthritis, the first manifestations were in the left ankle in two, in the left hand and wrist in one, and in both knees and both elbows simultaneously in one. The joints ultimately affected were the hands, shoulders and feet.

In the cases of gonorrheal arthritis the ankles were first affected in two, the hand in two, and the left knee in one. In all the cases there was a polyarthritis, and in one all the joints of both extremities were involved, as was also the spine with the production of a very marked kyphosis. In all these cases the arthritis followed closely upon the development of a gonorrheal urethritis, and in three of the cases there had been a previous arthritis, each one following a gonorrhea. The case with kyphosis had had three previous attacks. In all of these cases several of the joints had been affected at the same time.

In the one case of arthritis deformans the affection had existed for ten years. The first attack beginning in the feet had lasted three months. From that time on for several years there had

been repeated attacks, at intervals varying in duration from a few months to a year. With each succeeding attack more joints would become involved, until all the joints of both extremities became fixed, distorted and painful. The legs were flexed upon the thighs and the elbows fixed at right angles. All movements of the joints were painful, and in many of them there was a marked crepitus on motion.

The two cases of erythromelalgia, while not properly arthridides, are sufficiently interesting to warrant a brief description.

Case XI.—Male, aged sixty-five years, butcher. For twenty-five years had pain in metatarsophalangeal joints of both great toes, but more often in the left. Six months previous to attack was seized with vertigo and fell on the floor. The following day was unable to move the right leg. From that time to admission to the hospital was unable to walk (this was early in October). Since admission there was gradual improvement and some locomotion was possible. The feet were stiff and somewhat thickened, especially in the metatarsophalangeal joints of both great toes. The skin was hard, shiny and looked too small for the foot. The color of the skin was a dusky purple-red; both feet were cold to the touch. During the months of December and January a superficial ulceration appeared on the plantar surface of the right great toe. There was also a transitory glycosuria present.

Case II.—Laundry worker; ten months ago first had pain in feet. This would at times extend up the legs. Four weeks ago the pain in the left great toe became more frequent and intense, had to stop work. On admission the great toe of the left foot was swollen, red and painful, pain was much worse at night. While the appearance of the joint was typical of a podagra, the surface was cold to touch. After about three weeks in the hospital an ulcer appeared on the affected toe. There was no glycosuria.

Treatment.—The cases of acute gouty arthritis were put upon a milk diet, the joints were painted with what is called "joint special," a mixture composed of oil of gaultheria 1 dram, ichthyol 1 ounce, wrapped in cotton wool over which rubber protective or oil silk was held in place by a roller bandage. Colchicin 1-100 of a grain was given every two hours. If the bowels were affected by the colchicin it was given at longer intervals. As a rule the colchicin could be continued at two hour intervals for forty-eight hours or more. The inflammation and pain were usually controlled within this time, and after all acute symptoms had subsided the drug was continued at intervals of four hours until the patient was discharged.

In the chronic cases of gout the same method was employed if there was inflammation in any of the joints. The joints which were stiff were massaged and given passive movements, and the patients were directed to use the joints as much as possible. This is a most important thing to do, as the tendency of all these patients is to spare the joints and the liability to permanent stiffness and disability is thereby very much increased. There is no danger of setting up a new attack in a joint if the manipulations are begun after all inflammation has subsided. A very simple apparatus was employed which may be called a "teeter," and it was found to be most useful in limbering up stiffened knees and ankles. The "teeter" consists of a piece of board 21 inches long and eight inches wide. About three inches from the lower end another piece of board about ten inches long is fastened to the first piece at right angles by means of a bracket. Upon the shelf so formed the foot of the affected leg is placed, the longer board being in contact with the posterior aspect of the leg. The patient then sits in a rocking chair and rocks to and fro, thereby producing a greater or less amount of motion in the knee and ankle-joints. Very soon the patient becomes accustomed to the apparatus and can read while taking his exercise. It is an advantage over walking, as it not only keeps the weight of the body off the knees, but compels a much greater angle of motion. There is always a tendency on the part of a patient to fix the muscles so that the movement of the joint on manipulation is much more limited than is caused by the pathological changes in its structure. The use of the "teeter" eliminates this muscular rigidity and the movements of the joints are only limited by the actual structural changes. By persistent use these are to a great degree gradually overcome.

It has often been said that colchicum should never be used in chronic gout, because it would do no good, that by continual use the patient would become accustomed to it, and its effect would be lost in event of an acute exacerbation. Personal experience with it in chronic cases is entirely contrary to that opinion. It has been found to be of the greatest service in clearing up the joint symptoms in these cases, and when an acute exacerbation has supervened, its prompt effect in controlling the paroxysm has in no way been diminished. As an example of what it has accomplished in the writer's hands in chronic gout the following case is cited:

Case XIII.—Male; blacksmith; first came under observation three years ago, having suffered from gout for ten years, the last two years of that period he had been in the City Hospital. During the first six months of his stay in the hospital he had had repeated attacks affecting his feet, ankles, knees and hands, and had been confined to the bed off and on. During the remaining eighteen months he had been practically bedridden. At that time he was supposed to have arthritis deformans. At the time of admission to the second division of the hospital there was considerable inflammation of the toes, ankles, knees and hands. Wine of colchicum was administered to the point of tolerance. In the course of ten days the acute soreness had subsided, passive movements were then given. Within a month he was walking about the ward

TABLE OF CASES OF ARTHRITIS.

No. Case.	Sex.	Age.	Occupation.	Diagnosis.	Family History.	Previous History.	Mode of Onset.	Joints First Affected.	Joints Ultimately Affected.	Treatment.	Remarks.
1	M.	31	Laborer.	Acute rheumatic arthritis	Negative.	No previous sickness	Two weeks ago both knees and elbows became inflamed; had fever and profuse sweating.	Both elbows and both knees.	Elbows and knees.	Salicin; joint special.	Under salicin patient was able to sit up in three days. Soreness lasted in all eighteen days.
2	M.	51	Laborer.	Acute rheumatic arthritis	Negative.	Arthritis off and on for twelve years: fairly heavy drinker	Swelling, pain and inflammation in ankles eight weeks ago; came on at night.	Both ankles.	Left ankle.	Joint special.	No sweating with attack and coming on at night suggests gout.
3	M.	65	Mason.	Chronic gouty arthritis.	Negative.	Malaria forty years ago; had pains in joints at times.	Pain in right instep, heel and ankles; no redness or swelling.	Right instep, heel and ankle.	Right instep, heel and ankle.	Salicin for seven days; then colchicin; joint special.	No effect from salicin, prompt relief from colchicin.
4	M.	30	Laundry worker.	Erythromelalgia.	Negative.	No previous illness.	Occasional pain in big toes and feet, gradually extending up legs.	Both feet and big toes.	Both great toes; left worse.	Colchicin; dressing alumium acetate.	Appearance of both great toes very like acute gout; did not yield to colchicin; later ulcer developed on left great toe.
5	M.	39	Boatman.	Acute gouty arthritis.	Negative.	Similar attack two years ago.	Began with swelling and pain in phalanx of middle finger; three days later affected both great toes.	Phalanx middle finger; both great toes.	Both great toes.	Colchicin; joint special.	Yielded promptly to colchicin.
6	M.	55	Laborer.	Chronic gouty arthritis.	Negative.	Malaria twenty-five years ago; arthritis for ten years.	Pain in ankles and feet, off and on for ten years has affected knees and other joints.	Great toes, feet and ankles.	Toes, feet, ankles and knees.	Colchicin; joint special, "teeter" for knees.	After using teeter for some weeks, could walk about ward.
7	M.	48	Painter.	Acute gouty arthritis.	Father and brother had rheumatism	Syphilis twenty-five years ago; rheumatism at twelve years; several attacks of arthritis.	Began at midnight in ankle; twenty-four hours later in both big toes; joints inflamed swollen and painful.	Ankles; then big toes.	Both ankles; toes on left foot.	Colchicin; joint special.	All pain left in forty-eight hours; and was discharged from hospital in six days.
8	M.	45	Iceman.	Chronic gouty arthritis.	Father died of rheumatism.	Heavy drinker; syphilis fifteen years ago; arthritis for eight years.	Began in ankles, knees and elbow; later attack began in both big toes; coming on at night, with pain, swelling and inflammation.	Knees, ankles, elbow and big toes.	Right knee and ankle; both elbows metacarpophalangeal joint of thumb.	Colchicin; joint special.	Gradual improvement in all joints; considerable deposit about thumbs.
9	M.	33	Stableman.	Gonorrheal arthritis.	Negative.	Has had two previous attacks, each following gonorrhea.	One week after gonorrhea had subsided, left ankle became inflamed then went to toes, knees, shoulder and neck.	Knee, ankle, shoulder, back of neck.	Knee principally; also ankle, shoulder and neck.	Colchicin, salicin; joint special; etched urethra with nitrate of silver.	Colchicin and salicin had no effect; patient well and discharged after four etchings.
10	M.	27	Waiter.	Gonorrheal arthritis.	Negative.	Grippe ten years ago. No previous arthritis.	One month after gonorrhea both knees became red, swollen and painful.	Both knees.	Both knees; effusion in left.	Colchicin, salicin; joint special; etched urethra with nitrate of silver.	Colchicin and salicin had no effect. Soreness lessened after each etching; had three etchings.
11	M.	45	Laborer.	Chronic gonorrheal arthritis.	Negative.	Moderate beer drinker; had gonorrhea ten times; and last three followed by arthritis.	Left hand became red, swollen and painful after an attack of gonorrhea; extended to shoulders, knees, back.	Hands, shoulder, knees and back.	Practically all the joints; marked hyphosis.	Hot air baths; joint special; ichthyol bath; colchicin.	Hot air did no good; relief from ichthyol bath; some better with colchicin.
12	M.	39	Driver.	Gonorrheal arthritis.	Father had rheumatism.	Heavy drinker; acute rheumatism at age of twelve with iritis.	Four weeks after gonorrhea developed pain, redness, and swelling in right ankle, right wrists and both knees.	Right wrist, right ankle and knees.	Right wrist, right ankle and knees.	Joint special; irrigation of urethra with permanganate of potass.; passive movements.	Much improved under treatment; a little soreness left.
13	M.	46	Silk cutter.	Acute gouty arthritis.	Father had gout.	Moderate drinker; syphilis twenty-five years ago; gonorrhea.	Great toes became inflamed and painful at night, then went in fingers.	Great toe of right foot, three fingers.	Great toe of right foot, fingers.	Colchicin; joint special.	Prompt relief on administration of colchicin.
14	M.	43	Cook.	Intramuscular node in trapezius.	Mother had rheumatism.	Heavy drinker; gonorrhea three times. Syphilis fourteen years ago; rheumatism ten years ago.	Was drinking heavily; excessive pain developed in muscles of neck and shoulders.	No joints affected.	No joints; muscle of neck and shoulder.	Colchicin; deep massage over trapezius.	Relief from pain and lameness in a short time after massage.

TABLE OF CASES OF ARTHRITIS—Continued.

No. Case.	Sex.	Age.	Occupation.	Diagnosis.	Family History.	Previous History.	Mode of Onset.	Joints First Affected.	Joints Utlimately Affected.	Treatment.	Remarks.
15	M.	65	Butcher.	Erythro-melalgia.	Negative.	Has had attacks of pain in great toes for twenty-five years; glycosuria.	Pain began in great toes; has had it off and on for twenty-five years.	Great toes both feet.	Great toes both feet; ulcer on plantar surface of great toe.	Colchicin; tonics.	Appearance of feet similar to Case IV—No effect from colchicin. Patient has a transitory glycosuria.
16	M.	40	Tile-layer.	Acute gouty arthritis.	Negative.	Drinks heavily; and eight years ago had arthritis.	Pain, redness and swelling; began in great toe, right foot, then in chondro-sternal joint.	Great toe, chondro-sternal joint.	Great toe, chondro-sternal joint, left shoulder, node in left palm.	Colchicin, joint special.	Colchicin controlled pain; acted very severely on bowels.
17	M.	70	Watchmaker.	Chronic rheumatism.	Father and mother had rheumatism.	Stiffness and soreness of muscles for years.	No joints; general muscular stiffness.	.....	.....	Tonic.	No especial improvement; general senility.
18	M.	51	Blacksmith.	Chronic gouty arthritis.	Negative.	Rhinewine drinker, pretty freely; large meat eater; and arthritis for thirteen years.	First attack began in great toe of right foot, with pain, redness and swelling; then in left.	Great toe right foot; then left foot, ankles and knees.	All joints; large tophir on hands and feet.	Colchicin; joint special; ichthyol bath; massage.	Always got relief from colchicin; was also improving by ichthyol bath; iodide of potassium would always bring on an attack.
19	M.	27	Porter.	Chronic gouty arthritis.	Negative.	Moderate drinker; nine years ago attack in fingers.	Pain and swelling in fingers; then in hips.	Phalanges.	Phalanges, fingers, hip.	Salicin two weeks; colchicin; joint special.	Salicin had no effect; colchicin every four hours had no effect; colchicin every two hours promptly relieved pain and swelling.
20	M.	43	Driver.	Acute rheumatic arthritis	Negative.	Heavy drinker two former attacks.	Left hand and wrist became painful, red and swollen at night.	Hand and wrist; then elbows and shoulders.	Hand, wrist, elbows and shoulders.	Sod. salicylate, salicin; joints special; massage.	Yielded promptly to salicylates.
21	M.	53	Laborer.	Chronic gouty arthritis.	Negative.	Moderate drinker; arthritis for three years.	Began in both ankles, with pain, inflammation and high fever.	Ankles.	Ankles and phalanges.	Salicin for four days; then colchicin; joint special.	Salicin had no effect; patient developed temperature while taking it; yielded promptly to colchicin.
22	M.	28	Photographer.	Acute rheumatic arthritis	Negative.	Similar attack last summer.	Began with pain, redness and swelling in right ankle and foot; extended to left ankle and foot.	Ankles.	Both ankles; both feet; left knee.	Salicin; joint special.	At first patient had salicin (10 gr. every four hours) with no effect; was put on salicin (10 gr. every hour); promptly relieved of pain and swelling.
23	M.	35	Elevator man	Acute gouty arthritis.	Negative.	Drinks moderately; has had six or seven previous attacks in great toes.	Began with moderate pain in feet and toes, gradually grew worse.	Feet and great toes.	Great toe-joints, and both feet tophrase in ear.	Colchicin; joint special.	Yielded promptly to colchicin.
24	F.	40	Housewife.	Chronic septic arthritis.	Mother had rheumatism.	Has had several miscarriages; addicted to opium.	Following last miscarriage joints of knees and ankles became swollen and painful.	Knees.	Knees, hips and lumbar vertebræ.	Salicylates, and ichthyol baths.	No effect from salicylates, ichthyol bath gave relief, gradually overcame lameness and stiffness.
25	F.	48	Cigar maker.	Chronic gouty arthritis.	Negative.	Drinks heavily at times; had arthritis eight years ago with repeated attacks since.	Began with pain and swelling in knees, then to ankles, great toes and hands.	Knees.	Knees, ankles, great toes, and hands.	Colchicin; joint special.	Prompt relief with colchicin.
26	F.	42	Domestic.	Acute gonorrheal arthritis.	Negative.	Has had for some time profuse vaginal discharge.	Pain, swelling and redness came on suddenly in right wrist and hand; following day right foot became involved.	Right wrist and hand.	Right wrist, hand, and foot.	Bichloride of mercury douche; joint special; salicin.	Salicin had no effect; seemed to improve under bichloride douches.
27	F.	48	Cook.	Chronic gouty arthritis.	Negative.	Moderate beer drinker; has had several similar attacks.	Knee joints became swollen and painful; then went to thumb.	Both knees.	Both knees, metacarpophalangeal joint of thumb.	Salicin; colchicin; joint special.	Salicin for five days had no effect; prompt relief from colchicin.
28	F.	36	Housewife.	Arthritis deformans.	Mother had arthritis deformans.	Well until first attack ten years ago.	Began with inflammation and pain in feet; then with subsequent attacks all joints became involved.	Both feet.	All joints of both extremities.	Tonics.	

with the aid of crutches, and soon dropped the crutches for two canes. By early summer, about four months after he began his colchicum he left the hospital, having discarded his canes, and spent the summer in the country with friends. He was well enough to do light work, and in the autumn came back to the hospital to be cared for during the winter. His condition all winter was good, and there was very little soreness, which was always promptly controlled by increasing the colchicum. He left the hospital again on the advent of warm weather and has remained in very good condition since. Although colchicum has been taken continuously by this patient for over three years, except for short periods, it has never failed during this time to control all soreness and stiffness which might intervene.

The ichthyol bath is another measure which has been found very serviceable in these chronic cases. An ounce of ichthyol is put into a tub of water. The water is fixed at a temperature of 98° to 100° F., and the patient remains in the bath for ten to twelve minutes. The effect of the bath is the immediate relief of stiffness and soreness, which often lasts for forty-eight hours; the succeeding baths give longer periods of relief. It is a good plan to precede the massage and movements of the joints by such baths, as there will then be much more freedom of movement and less soreness on manipulation. In addition to the specific medication iron, arsenic, strychnine and other tonics were given as the occasion called for them. The diet was generous and nourishing, and only limited by the digestive condition of the patient.

Acute Rheumatic Arthritis.—These patients were put upon a milk diet, the joints done up in "joint special," as in acute gout, salicin in ten-grain doses was given every hour until the symptoms began to ameliorate, which usually took place within the first twenty-four hours. The salicin was then decreased, but continued until the patient was entirely free from fever and pain. Salicin is preferable to any of the other salicylic preparations, as it does not disturb the stomach or produce any unpleasant symptoms. To get the effect from it, however, it must be given freely.

The practice of putting these inflamed rheumatic joints in splints is much to be condemned. There is always more or less of inflammatory exudate thrown out about the joint in this condition, which becomes organized very quickly if the joint be rendered absolutely immobile by a fixed splint. A stiff joint which may take months to restore to usefulness is very often the sequence of such a procedure. With a soft dressing, such as described above, the joint is capable of slight movement such as would come from changing position in bed, etc., sufficient, however, to prevent the ligaments from becoming glued together, and as the soreness wears off, greater freedom of movement comes. In such cases passive movements can be instituted much earlier and the danger of permanent stiffness be very much lessened. It is exceedingly rare to find a case in which the pain is so severe with these slight movements as to render complete immobilization of the joint necessary.

In gonorrheal arthritis neither salicin nor colchicum has the slightest effect on the disease. In fact, so far as is known, there is no drug taken internally which will control the course of the affection. In the five cases in this series irrigation and local application to the urethra were used with very good effect. In two of the cases there were erosions of the urethra which were evidently the source of the affection. These were both etched with a 50 per cent. solution of nitrate of silver. One was cured after four etchings, the other was much relieved after each treatment, but was not entirely well at the end of the period. The one female in this group seemed to improve under bichloride of mercury douches.

For arthritis deformans which has reached the stage of the one case tabulated there is, of course, very little to be done. Good food and tonics are alone to be relied upon. The ichthyol bath will often give comfort, and static electricity does good in various ways.

Mention was made above of one doubtful case which might be either gout or rheumatism, where an intramuscular node in the trapezius was present. Such cases are not so very rare. Here there were present pain and stiffness of the muscle which were very much aggravated by movement. On examination the nodes were felt down deep in the muscle. The treatment consisted of massage and the administration of colchicin, under which the nodes in a very short time disappeared.

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CONTRIBUTIONS TO THE PATHOLOGY AND TREATMENT OF ACUTE GONORRHEA.

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In all probability fully 90 per cent. of all urethral discharges are due to the gonococcus; the rest are caused either by pyogenic bacteria and the numerous unclassified microbal flora of the urethra or are due to chemical or traumatic conditions causing a catarrhal urethritis. These various conditions may be conveniently formulated under the following headings:

1. *Invasion of gonococci plus reactive emigration of leucocytes, pus serum and epithelial and eventually deeper structural lesions, i.e., gonorrhea, a specific and infectious urethritis.* Mircoscopically, we find mainly intracellular, intercellular and some extracellular gonococci, leucocytes, and epithelia; clinically, more or less inflammatory symptoms, usually copious discharge; complications and systemic metastases frequent.

2. *Bacillary, but non-gonorrheic urethritis.*—As a primary infection this form is very rare, and may be due to chemical or sexual influences; if present, however, it is of a quite chronic char-

acter, and often refractory to treatment. Casper[1] and Waelsch[2] have seen complications occurring with this form (prostratis). As a so-called secondary infection following gonorrhea, however, this form is very frequent and merits great attention. The healthy urethra is the habitat of a numerous innocuous microbial flora. While non-pathogenic for a healthy urethra, which they inhabit with impunity, these micro-organisms, when reinforced by the bacteria of pus or by bacillus *coli commune* may assume irritating properties in a urethra debilitated by the gonococcus or its toxins. The contributary causes for this kind of urethritis are: the ubiquitous pus bacteria, unclean instrumentation, chronic constipation, phosphaturia and oxaluria, the contamination with leucorrheal discharges, overtreatment, etc. Microscopical examination reveals micro-, staphylo-, and strepto-cocci, various diplococci, epithelia, leucocytes, mucus, Boettcher's crystals from the prostate or spermatozoa.

3. *Catarrhal urethritis, either simple primary or secondary aseptic urethritis, no pathogenic microbes.* The primary form is extremely rare. The secondary is due to a prolonged catarrhal condition of the mucosa, and occurs mostly as a terminal postgonorrheal discharge. Contributary causes: Sexual overindulgence, masturbation, sometimes even aseptic instrumentation, overtreatment, chronic prostatitis, bicycling, horseback riding, irritating drugs, urethral chancre, herpes, and a slightly mucopurulent discharge of recent syphilis caused by maculopapular lesions in the urethra. Microscopically, we find in this form mucus and epithelia imbedded in a network of fibrin; occasionally an accidental admixture of microbes as nosoparasites.

I will here consider gonorrhea only, due to the invasion of the gonococcus discovered by Neisser in 1879. It took some little time before this fact was accepted by the sceptical minds of medical men. Long before this gonorrhea had been attributed to a fungus called *Trichomonas vaginalis* by Donne,[3] to an alga called *genitalia* by Jusseaume,[4] to another fungus called *Conoiothecicum gonorrhoicum* by Hallier, and to spores called *Crypta gonorrhoica* by Salisbury.[5] It is only in historical justice to Salisbury that I here venture to credit him, for the first time, to my knowledge, with believing that he had really seen gonococci. He describes his spores as occurring in pairs and sometimes in fours, "undergoing the process of duplicative segmentation," developing rapidly in and among the parent cells of the urethral mucous membrane. "In some instances the pus cells become filled with the spores." He goes on further by stating—and here fate and lack of staining technic and of our high grade microscopes make him unwittingly deviate from a truth which it seems was within his grasp—that "the spores unite into filaments." In Eulenburg's "Real Encyclopedy," in the article "Gonorrhea," Gruenfeld, of endoscopic fame, in 1885, remarks incidentally that Neisser has found a micro-organism allegedly peculiar to gonorrhea, these being the only words attributed to a great discovery, already over six years old.

All this time, and well up in the 70's of the last century, the different urethral discharges were promiscuously called gonorrhea. The so-called strumous, herpetic, gouty, rheumatic, scorbutic habit was held to produce urethral discharges in conformity with ancient traditions not entirely eradicated in our times. We know that these constitutional anomalies do not cause urethral discharge, as was thought, but that they may prolong in such persons the duration of chronic gonorrheal discharge. Besides these diatheses there are innumerable causes for gonorrhea. Milton compiles 37, among which are hemorrhoids, dentition, ascarides, suppression of skin diseases, etc. There are some ludicrous causes of gonorrhea, like, urinating in the night air, against the north wind, the exertion of lopping a tree, a strain, cold from the closet, etc. *Omnis gonorrhoicus est mendax!*

But the main cause for discord was to decide the question whether leucorrhea, a catarrhal, non-specific inflammation of the vagina or uterus, could cause gonorrhea in man. Ricord[6] declared that gonorrhea is neither specific nor contagious, that it is due to different causes and may also be generated by leucorrhea. Diday, his genial pupil, asserts that any woman with a discharge may give gonorrhea. That all hapless husbands of such leucorrheal women did not acquire gonorrhea is due only to the most providential circumstance, that they are becoming acclimatized, so to say, to the special conditions of their wives. Gonorrhea may be given, says Linas,[7] by the most chaste of wives, while Fournier (Milton, *loc. cit.*) gives the ante to Ricord by maintaining that more frequently than otherwise a woman who gives gonorrhea may not have it herself. Bumstead[8] says that he has reason to believe that frequent repetition of the sexual act has produced gonorrhea in women free from any previous disease. These believers in the non-specific nature of gonorrhea are, however, grossly inconsistent in their reasoning when they maintain that if in a female the signs of infection are in the urethra, then specific gonorrhea is present, while when other parts of the genitalia are affected it is not gonorrhea. Even recently an authority like Lydston[9] holds that all inflammatory affections from the urogenital membrane are likely to be infectious, in spite of the absence of gonococci; it may develop *de novo* in the female sexual tract. The discovery of the gonococcus, he thinks to be only of relative clinical value.

As to the assertions of the first-named authors, I think the issues have been hopelessly confused. Microscopical and cultural experiments had not then revealed what is common property now, that is, the specific coccus, and its peculiarities and its inveteracy were unknown. As to the remarks of the last-named writer, they are entitled to the greatest consideration, coming from such an unimpeachable source. That gonorrhea must have

begun spontaneously somewhere and somehow cannot be disputed, and it possibly may again originate in the same way. But this reasoning may apply equally to diphtheria or typhoid; yet we do not maintain that any of these diseases originated *de novo*, but attribute their propagation from individual to individual. I am of the conviction that leucorrhea, simple or purulent, which does not contain gonococci cannot cause gonorrhea in the male; neither will intercourse with women so afflicted, either during or directly after the menstrual period, produce it. It may, however, cause a purulent, non-gonorrheic bacillary discharge of short duration and little irritation. I have never seen in such cases complications of the adnexa to occur. Where such complications have taken place it was due to latent gonorrhea, where under the stimulus of excitement reinfection occurred by dormant gonococci, which again became active.

In 1879 Neisser discovered the long-suspected parasite in the form of a peculiar diplococcus in urethral gonorrhea and ophthalmia neonatorum, calling it the "gonococcus."[10] It is readily distinguished by its coffee-bean form, dimensions, grouping in clusters of multiple fours, intracellular situation, and especially by its being readily decolorized by Gram's method, and by its somewhat difficult cultivation. The etiological importance of the gonococcus was undoubtedly established through the positive inoculations of Bumm[11] and of Wertheim,[12] which proved that a pure culture of the gonococcus implanted in a healthy urethra of man reproduced the disease clinically, microscopically and culturally, putting the specificity of the gonococcus as the cause of gonorrhea beyond a doubt. Soon a host of authors, especially Finger,[13] Steinschneider and Schaeffer,[14] and others, confirmed these results, while other investigators, like Young,[15] and of late Thalmann[16] facilitated the successful cultivation of the gonococcus so as to be almost within reach of any practitioner with some bacteriological knowledge.

Pure cultures of the gonococcus have been experimentally inoculated by many others since in several localities. Ahman[17] reports a case where a pure culture obtained on blood serum from a patient with gonorrheal arthritis was injected into the urethra of a man. In a few days a gonorrheal discharge developed and in turn a synovitis, which showed gonococci present in pure culture. Finger and Bockart[18] in 1883 made urethral inoculations with successful results. Hansteen[19] obtained pure culture of gonococci from operated cases of inguinal adenitis, inoculating it in the urethra of a healthy man and causing real gonorrhea. Successful cultivations from cases of arthritis, subcutaneous abscess, acute and chronic cystitis, pyonephrosis and peritonitis were obtained by Young[20] and others. Lang and Paltauf[21] report such abscesses on the dorsum of the hand. In a patient with gonorrhea referred to me by Dr. M. Goldberg, of this city, I have seen a severe exudative inflammation of the right wrist. Examination revealed gonococci. Similar cases are reported by Horwitz,[22] Bujivid,[23] and Jundell.[24] I have seen a case of painful swelling of the costosternal cartilage in a patient aged forty years, who had gonorrhea.

To mention just a few other instances of systemic gonorrhea I will quote a case of gangrene of the foot and leg by embolism of the femoral artery through ulcerous endocarditis caused by gonorrhea,[25] rupture of the aortic valve in consequence of a verrucous mass containing gonococci.[26] Also a similar case by Keller,[27] but situated on the valves of the pulmonary artery following gonorrhea. Alfred Stengel,[28] also Bales and Siaen,[29] J. Adler,[30] and others, report cases of fatal blennorrhagic endocarditis and pyosepticemia. Wertheim[31] reports a case of gonorrheal cystitis with thrombophlebitis of the bladder. While even Finger, Bumm, Sänger and Guyon, regard the latter complication as caused by a mixed infection, it was shown by Melchior,[32] Wertheim, Lindholm[33] and others that gonococci alone were found in the mucosa of the bladder, in the venous capillaries, and in the urine of these patients. Colombini[35] and others found albuminuria due to general blemorrhoic infection. Roswell Park[34] reported several cases of gonorrheal pyemia. Salpingitis as a contiguous infection occurs in from 23 to 70 per cent. of all gonorrheas in women.

We are most conversant with the painful affections of the joints, well-known as gonorrheal rheumatism, of inflammations of the synovia of the joint, and of the sheaths of the tendons, as tendosynovitis. These latter processes have been recently observed even in children. Smith[36] found an infant, fourteen days old, with ophthalmia neonatorum afflicted with gonitis dextra. Griffith[37] observed iritis to be a more frequent complication of gonorrhea than of syphilis. Acker[38] reports a case of multiple arthritis in a girl, two years old, afflicted with gonorrheal vulvovaginitis. Lazarus,[39] in quoting Engel-Reimers' case of paralysis of the larynx, describes a case of posticus paralysis necessitating tracheotomy in a patient with gonorrhoic arthritis.

The influence of the gonococci upon the nervous system has been already observed by Charcot[40] in 1887, Leyden[41] 1892 as gonorrhoic polyneuritis especially of the lower extremities. Sellenew[42] coincides with Christmas[43] that the gonococci and the gonotoxins form a most energetic poison for the nervous system. They may cause alterations in the sensitive, vasomotor, secretory, trophic, and motor nerves, and also of the skin and tendon reflexes. Orlipski[44] describes gonorrheal neuroses; Kienbock[45] and Ware[46] report blennorrhoic neuritis and myositis; Glyn[47] and Kankarovitsch,[48] besides multiple neuritis, describe paralysis as a complication of gonorrhea, and Welander[49] observed a fatal case of polyneuritis due to gonorrhea.

The osseous system has been also reported as affected by Philippet,[50] who mentions gonorrheal osteitis and periostitis, especially of the small bones of the hand and foot, and Kieubock,[51] who demonstrated by radiography atrophy of the

wrist, elbow and hip joints. I have observed in a physician arthritis of the fibrous parts of the vertebral column, with excessive pains and stiffness as a post-gonorrhoic affection.

Finally skin affections, like erythema nodosum, hyperkeratosis and urticaria[52] have been observed as sequelæ of the ubiquitousness of the gonococcus or its toxins, and pyemia, iritis, pleuritis, etc., acute general peritonitis[53] by Wertheim,[54] Walton,[55] Cushing,[56] and others; all these manifestations showing general systemic infection by extensions and generalizations of the gonorrheic process. A veritable mine of information on systemic (metastatic) gonorrhea can be found in the work of Schneider,[57] and v. Hoffman,[58] which contain a compilation of all published cases since 1880. Sturgis[59] also deals ably with this question.

But well known as these facts are, it has puzzled us not to find the gonococcus in some of these metastases, although they were in casual connection with the gonorrheal process. Wassermann[60] and Scholtz[61] have shown that gonococci produce toxins, that is, products of their metabolism. It may be inferred that these toxins are the cause of such metastatic processes, where painstaking cover glass and culture examinations do not reveal the presence of gonococci. The toxins in such a case might have been set free by the dissolution of the germs, but in most cases the presence of the gonococci was demonstrated.

PECULIARITIES OF THE GONOCOCCI.

These local and general manifestations of gonorrhea have their analogue in other microbial infectious diseases. We have all seen cases of diphtheria, or of streptococcus infection or lacunar mixed infection of the tonsils remain local, causing no systemic disturbance, while in some instances the most foudroyant general infection takes place. We try to explain this by the assumption that in these cases the Klebs-Löffler bacillus or the streptococcus did not generate toxins or that its toxins were neutralized in one instance and not so in the other. Even as to the dreaded persistency of the gonococcus we find similar conditions in other microbial diseases. I have seen the bacillus of diphtheria demonstrated by cultivation from the tonsils of patients who had the disease five months before. We know that the bacillus of Eberth, the typhoid bacillus, has been found in the urine and spleen six months after infection. They, as well as the gonococcus, after such protracted reproduction upon the same soil, lose their virulency almost to the point of innocuousness, but they become virulent again when transported to a new soil. But it is questionable as yet whether in those cases a reinfection can take place in the same individual, as is the case with the gonococcus under the influence of an irritating cause.

Here it seems the analogy ends; probably because gonococcus life has been studied more closely. We know that the gonococcus may lie dormant in Littre's glands, or in the secure depths of Morgagni's crypts, in Cowper's, in the ducts of the prostatic glands, or in the remote abodes of the seminal vesicles. The "morning drop" of the patient may not show the presence of any gonococci, the scrapings of the urethral mucosa, the careful and trying examination of the threads in the urine may all prove negative, and yet there may be gonococci hidden in the contiguous tissues and glands. There they lie, seemingly innocuous in their latency, until a sudden mechanical impulse sets them free. Excesses *in Baccho et venere* and irritations of the genitalia of a kind to cause often-repeated hyperemia; overindulgence, better known as the much complained-of "strain"; chronic prostatitis, perchance even constipation, all these may cause, in a mechanical way, an expression of gonococci and a new invasion of the urethral mucosa by them.

The reported cases of acute diffuse gonococcus peritonitis (*loc. cit.*) developing during menstruation and following a recent exposure to infection, will recall to the mind of the practitioner such cases of peritonitis in the puerperal state where, in spite of the most minute asepsis and an uneventful delivery, septic peritonitis has set in. Likewise cases of parametritis and perimetritis, will be remembered that have started with the onset of menstruation and have been attributed to taking cold, to a strain, and to other such unproven incidents. There has always been, and there is yet, a suspicion in critical minds concerning the origin of these exudative pelvic inflammations. In the light of the ubiquitousness of the gonococcus, and the obscure and circuitous ways of its acquisition, it is perhaps not too hazardous to maintain that a goodly part of ascending pelvic inflammations, unrecognized as to their etiology, are due to gonococcal infection, either by the coccus itself, or by its toxins. The puerperal and menstrual states, with their attendant congestive conditions, might create an especially receptive medium for the propagation and invasion of dormant, or, as the case may be, of a recent and active brood of gonococci.

Furthermore, the life history of the gonococcus is of such a retributive character that it stops short of nothing. A man affected with chronic gonorrhea of a form so slight that he may be unconscious of its presence, may become refractory to his own gonococci. But transplanted to a new soil they will become virulent in the vaginal mucosa of their new host. By this implantation on a new culture medium, the gonococci may again assume a degree of virulency which, in turn, is capable of infecting the man who bore the ancestors of such gonococci with immunity. By some as yet unknown biological transformation they become alien to the soil they have before inhabited with impunity to its bearer. It is evident, therefore, that a woman with an exudative parametritis or perimetritis, acquired from latent gonorrhea of a man, may be able, after sexual relations have been resumed, to infect that man with just as virulent a type of gonorrhea as if acquired by any impure illegitimate life. The physician who is well acquainted with all these

possibilities of gonococcus life, will be able to explain and to redeem a seemingly lost reputation.

STERILITY.

The main cause of sterility in both sexes we know to be gonorrhea. While syphilis provokes miscarriage it does not hinder propagation in the male and conception in the female. A reasonably energetic and well-conducted antisyphilitic treatment will, as we know, attenuate the virus, or even annihilate it, so as to make both factors capable of procreation; else would it be a questionable blessing to propagate inferior individuals. Syphilis, although tainting it, does not destroy the vitality of the semen, but impairs gestation by weakening the retaining power of the womb. This is a wise defensive step of Nature to eliminate those which would otherwise be born with misery to themselves and others. Gonorrhea, however, destroys not only fecundation through azoospermia and nekrospermia in man (indurative epididymitis) but gives through the persistency of the gonococcus in the prostate and seminal vesicles an infectious character to the otherwise healthy semen. Latent gonorrhea with dormant gonococci in the prostate, seminal vesicles, Cowper's glands, or in the deeper glandular structures of the urethra, also strictures, indurative urethritis, cavernitis and resulting malformations; in the female endometritis, metritis, salpingitis, ovaritis, as pointed out by Bernultz[63] in 1857, and most emphatically by Noeggerath in 1872,[64] will add their destructive mites to the impaired virility in men and conception in women.

Gonorrhea, therefore, which is acquired by probably 80 per cent. of men is to be looked upon as a disease of the masses and as the main cause of depopulation; depopulation resulting through a decreased birthrate and the morbidity in women so affected who are either maimed by necessary surgical interference or succumb to the later manifestations of gonorrhea. Neisser's assertion that it is more frequent than measles is a comparison lucidly conveying to the mind its frequency at a glance. Gonorrhea does not only affect the working and earning capacity, but also the health of the people. Eighty per cent. of all deaths from pelvic disease in women are due to gonorrhea. Twenty per cent. of all blindness is due to gonorrheal infection of the newborn. Fifty per cent. of all involuntary childless marriages are caused by gonorrhea of the female organs of generation, of which 45 per cent. are due to marital infection by men. Race suicide, therefore, after all, is less a question of marital precaution than of matrimonial incapability.

This cursory allusion to the social danger of gonorrhea is sufficient cause for advising individual prophylaxis that has proved both promising and feasible.

General Prophylaxis.—To combat an affection so widespread as gonorrhea, which merits the attribute of a pandemic, exercising its deleterious consequences for ages, although the knowledge of their real importance is of comparatively recent date, must have stimulated mankind to preventive measures. It lies not in the scope of this paper to deal with the moral aspect of the question; the writer has done so extensively in an article read before the Fifty-third Annual Meeting of the American Medical Association, at Saratoga, in 1892[64] to which I beg to refer the reader. I would only briefly remark here that it is not for the sake of the profligate that we recommend prophylactic measures, but to save the innocents who are threatened with a tedious, devitalizing, and destructive disease, tainting the yet unborn, and maiming and invalidating those living. It is evident that continental measures against prostitution have proved futile wherever tried; they sterilize only a small number of foci and invariably augment clandestine prostitution. While in this country, besides sentimental reasons, constitutional rights, moral considerations, etc., are inimical to the adoption of such means. I declare most emphatically, however, that the State cannot with impunity fail to take cognizance of the plague, and that between the unwholesome conflict of sanitary and moral interests I have found that morality is in no way increasing by relegating the sanitary aspect of the question to the background. Some State legislation, not necessarily reglementation, is needed. Moralists and sanitarians must make mutual concessions on a common platform. Until such combined efforts will meet their realization, we must, under the present conditions of moral evolution of the race, take hold of the nearest measure available, and this is *special individual prophylaxis.* People ought to be enlightened on sexual hygiene and the innocuousness of continence. The dangers of gonorrhea—too frequently underestimated, or even frowned upon as yet—and the manifold ways of communicating it, should be explained to them.

Among venereal diseases gonorrhea is the only one in which the causative factor, the gonococcus, is known; consequently agents for the destruction of the pathogenic germ *before* incubation has set in, have been devised with success. It consists (analogue to the Credé instillation in ophthalmoblennorrhea) of the instillation, immediately or shortly after exposure of a two per cent. solution of silver nitrate or of the more recent silver preparations. Prophylactic measures which prostitutes are compelled to use under Continental reglementation are under the reigning circumstances here out of the question.

The *treatment* of gonorrhea may be summarized as follows: (1) Treatment by prophylaxis; (2) the abortive treatment; (3) the expectant treatment without remedies; (4) treatment with remedial agents combined; antiphlogosis; (5) active etiological treatment followed by treatment of lesions.

1. The *treatment by prophylaxis* is coincident with the prophylactic measures mentioned before.

2. *The Abortive Treatment.*—In ancient, in medieval, and in the present times, and before the

microbial conception of gonorrhea, innumerable attempts to eradicate the process in its incipiency were made. But the abortive treatment was elevated to the dignity of a method through Ricord[65] and his followers (Diday, etc.) in 1851. It consisted of the injection into the urethra of a strong solution of nitrate of silver, 10 to 15 grains to the ounce, after urinating. The result was gratifying only in a minority of cases. In the others phlegmonous inflammations, suppression of urine, suppurative prostatitis, and other serious complications supervened. Welander,[66] in gonorrhea of not more than three days' standing, destroyed the epithelium of the meatus and fossa navicularis until capillary oozing ensued, and then injected a 2 per cent. solution of nitrate of silver for two minutes, following it with injections of salt water. Hugues[67] used the same procedure, injecting bichloride in the strength of 1 : 1,000. Koester and Jadassohn, 1892,[68] recommended ichthyol, and Janet[69] in 1892 published his abortive method of large flushings with strong solutions of permanganate of potassium 1 : 2,000 to 1,000, which he soon changed (1894) into his well-known modified abortive treatment by irrigations of the same drug in the strength of from 1 : 4,000 to 1,000. Neisser, after the gonocidal power of silver nitrate had been established at his clinic by Friedheim in 1892, injects a solution of it in the strength of 1 : 3,000 to 1,000. Feleki[70] cauterized the urethra with a solution of nitrate of silver 1 to 20 through the endoscope. He effected a cure in all his twelve cases in from four to twenty-one days: a rather too optimistic result when we consider that five of his cases were first infections and several had several infections. Kopp[71] reports 25 per cent. of cures in cases that presented themselves fourteen hours after exposure. In most of these cases a profuse, bloody, purulent discharge took place, with violent pains and inflammatory symptoms. Statistics to this effect, although given by honest conviction, are not always reliable.

With the introduction of the new silver salts as eminently gonocidal and non-irritating remedies, the abortive treatment of gonorrhea has assumed a new aspect. If by the use of these remedies we should happen to fail in our attempt we have at least not done any harm, as was the case, I believe, with nitrate of silver. Welander,[72] in 1898, and afterward Ahlstrom, in 1900, were the first to use these preparations as an abortivum, employing protargol in a 3 to 4 per cent. solution, thrice daily, for three days, with about 50 and 83 per cent. respectively of positive results. They maintain that if used within a few hours after infection it will act as a positive abortivum. Blaschko,[73] in 1902, is also a zealous adherer of the abortive cure of gonorrhea. He has given up a 2 per cent. solution of nitrate of silver for this purpose, and uses instead injections for three days of a 1 to 2 per cent. solution of albargin, or a 4 per cent. protargol solution, retained three to five minutes. He reports absolute absence of all irritation, and a positive result in 50 per cent. of the cases. He considers the ease of application as a great advantage over the Janet method. Frank is of the same opinion. Bierhoff,[74] in a paper read before the German Medical Society, December 7, 1903, reports a series of thirty cases treated abortively by injections of protargol. He used it in cases where the second portion of urine was clear, showing no posterior involvement. In fifteen cases of first attacks he had negative results, while in the other fifteen, who had two or more attacks, the results were positive. In the first series of cases, however, the patients did not present themselves earlier than the sixth day after infection. Other writers, like Christian,[75] maintain that gonorrhea cannot be aborted.

To me it is not so much the question of the remedy used as the question of principle which needs to be decided, Can we abort gonorrhea? Between the unfruitful conflict of the pros and cons, the weight of evidence is in favor of the former. There certainly must be a time-space—it varies from eighteen hours to three days—within which the gonococci, despite their quick penetration, are superficial and capable of being killed. Granting this, their early destruction is a possible proposition. But the prodromata of gonorrhea are, unfortunately, of such latent, hardly perceptible nature that only the hypochondriac self-observer, or one especially interested in the hygiene of sexual life—rara aves—will apply the remedies in the period of incubation. Therefore, I would call aborted only such cases which are so treated within thirty-six hours after infection as the utmost average limit. I would recommend such a procedure when the microscope shows abundant gonococci on epithelial cells and only very few leucocytes. Cases that are successfully cured forty-eight hours or more after infection I look upon as having yielded to immediate early treatment, or prophylaxis by treatment in the ordinary sense of the word.

3. *Expectant Treatment Without Remedies.*—It has been maintained by those favoring conservatism that gonorrhea is a systematic infectious disease with rise of temperature, increase of leucocytes, enlargement of the lymphatic glands and spleen, and having its stage of incubation, flourishing and defervescence. The theory propounded by Sternberg, in 1881, and elaborated by Metchnikoff, in 1884, of phagocytic action of leucocytes, to engulf and destroy micro-organisms, has been generally accepted. But it seems to me too phantastic to deduce from it the absolute nihilism as to treatment by further maintaining that the infective agent must not be destroyed, as it generates substances—antitoxins—or so-called defensive proteids, which must be looked upon as Nature's remedial agents. We have reason to believe that gonorrhea will heal spontaneously. But in treating, for instance, a case of typhoid or pneumonia on the expectant plan, we do not indulge in absolute nihilism either. The patient is in bed; his hygiene and dietetics are looked after. Our social conditions will permit only a very limited number of gonorrhoics to take to their bed. The exi-

gencies and exertions of business life will frustrate a spontaneous cure. With their unchecked discharge they are menace to others and to themselves. It is therefore obvious that, as in the present state of our knowledge, we cannot depend solely upon the curative action of Nature's endeavors; if judicious antiparasitic treatment is instituted to support these, the chances of recovery and the avoidance of complications are in favor of the patient.

4. *The Expectant Treatment with Remedial Agents (Balsamics) Combined.*—I have certainly seen patients who had refused other kind of treatment get well under the sole use of balsamics, of course, so far as stopping of the discharge and the discontinuing of attendance may be taken as a sign of a cure. It is held by some that the balsamics should not be administered in the acute stage, as they stimulate the urethral mucosa at a time when all irritation should be avoided. This point is not well taken. May I ask of those who irrigate in the most acute stages, whether the pressure irrigation of the urethra from outward within is less irritating than a flushing of the urethra with urine impregnated with the infinitely less irritating products of the balsamics, through the natural channels from within outward. Finger administers the balsamics in those cases where acute symptoms supervene and injections would only increase the distress and also in the usual run of cases when injections are at once applied, thus combining both agents. On the contrary, Taylor[76] and Pedersen[77] employ the balsamics only when the inflammation begins to decline. Most German writers use them from the beginning.

Considering the pathology of gonorrhea that the discharge is the repelling act of the organism to flush out the gonococci, and considering that the balsamics tend to stop the discharge at a time when increased leucocytosis is essential, I do not for this reason recommend the exhibition of the balsamics before the acme of inflammation has declined. I also, however, regard them as an adjuvant of great value beyond this stage.

As to their mode of action, theories differ. The experiments of Ricord and of later writers tend to show that the urine impregnated with the disintegrated or liberated products of copaiba balsam or santal oil—most probably resinous acid and ethereal oil—and united according to Weikart with the alkalies of the circulation as sodium copaibate or sodium santalate, acts as a local detergent to the urethral mucosa, making it (laboratory experiments to the contrary) a less productive culture medium. Among the long list of balsamics, santal oil is justly the most employed by virtue of its lack of disagreeable properties and positive effectiveness. It sometimes produces congestion and pain in the kidneys, and should then be stopped at once. It is best given in capsules containing 10 drops, three times a day.

As to the antiphlogistic treatment the antiquated way of leeching, etc., has only an historical interest; but even in our pro modern times a certain amount of rest, cold applications, spare diet, regular evacuation, and the copious drinking of water, demulcents, and alkalies or an infusion of folia uva ursi, are very recommendable, but by no means obsolete adjuncts. I have found prunes a pleasant means of rendering the urine alkaline.

5. *Active Etiological Treatment, Followed by Treatment of Lesions.*—This can be done, first, by the Janet method of copious irrigations with permanganate of potash, and second, by injections of the new silver salts by hand syringe. What is called the modern treatment of gonorrhea, a term so often used of late, comprises the endeavor to treat gonorrhea according to its etiology. The excitant factor being the gonococcus of Neisser, its removal and eradication should form the main and primary object of our action. If the etiological treatment of acute gonorrhea with the silver proteid preparations would be instituted as speedily as possible it would diminish complications of the glands and lacunae of the anterior urethra, acute and subacute posterior urethritis, cowperitis and prostatitis, and incidentally chronic urethritis and prostatitis. While acute posterior urethritis, which is regarded as the most usual complication, will develop in 70 to 80 per cent. of cases treated in the beginning with astringents, we will find it when employing the new silver salts only in 30 per cent., and according to some statistics in only 10 per cent. of cases.

(To be Continued.)

RECENT ADVANCES IN THE THERAPEUTICS OF PEDIATRICS.

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The most eloquent argument that can be advanced in proof of the worthiness of this branch of the art, is the remarkable reduction in infant mortality in all civilization. Our large cities[1] point with satisfaction to the decline in the death rate of children in the last ten years, and further improvement may be confidently expected with a more thorough application of recognized knowledge.

In this contest of human existence, much depends upon getting a good start, and some of these infants that are being saved have a hard struggle shaking off the iniquities of their fathers. It is an established fact that the children of young parents are stronger and of better health than those of parents who marry late in life. It is to be expected that the child of a gouty, nervous club-man and a broken-down society belle will inherit the tissue proclivities and endowments incident to a life of more or less dissipation.

Several conditions are eminent: (1) belated marriages result in diminished birth rate; (2) the increase of cancer is only among the nations in which the marriage age has been steadily advancing; and (3) the psychosis noticeable in a large percentage of children depends, not so much

upon school life, as upon inheritance and the nutritive process of the developmental period.

The medical inspection of schools has only begun to accomplish what is within its possibilities, and the future school will have its medical attendant who will not only exclude children suffering with contagious diseases and those who have other diseases rendering them too ill to remain in school, but will direct those mentally and physically defective and determine the amount of school work a child is able to perform.

Most college teachers recognize the fact that when normal students eat, sleep and exercise wisely there is little danger from over-work, and their college stay is attended with health improvement. It should be more generally known that every scholar is not intended by nature to be a professional man. Many a good proletarian has been led astray by being encouraged to believe that "any one with a sufficient stock of impudence may reasonably well pass for a physician."

Experimental and clinical observations have served to emphasize many well-known facts respecting infant feeding. The danger from raw milk in the summer is conclusively demonstrated,[2] and universal pasteurization is a most important factor in reducing infant morbidity and mortality.

Behring[3] and Richie[4] argue in favor of using preservatives, and place especial stress upon formalin in from 1 to 500 to 1 to 10,000. Behring claims that formalin in these proportions is tasteless and harmless; that the curdling is more flocculent, the milk more digestible and the immune and antibodies unimpaired. Personally I have had considerable annoyance with milk containing formalin, making it impossible to put the milk through the first process of digestion. If, then, this formalinized milk resists the action of pepsin, the enzymes of the milk must also be destroyed, and its digestibility must be greatly impaired.

The recommending of preservatives for milk is an exceedingly dangerous procedure, and its enactment would encourage careless and indifferent dairymen to deliver any amount of filth. Electrical preservation, now under experimentation, may clear this problem for the future. Just now we are most concerned in the production of a pure, clean milk and its adaptability by suitable modification to individual cases.

The selection and care of the milch cow, the handling of the milk, and its modification for the infant has been thoroughly presented to the profession, and I will take time simply to mention that the outline suggested by the United States Department of Agriculture for the improvement of market milk should be inforced by law.

Buttermilk feeding[5] has been revived, and its advocate believes it to be a life-saving preparation for sick children. Men frequently lose sight of the modification of sweet whey, which is the sheet anchor in digestive disorders. Usually when a physician vibrates from boiled flour and buttermilk to proprietary foods and condensed milk, he demonstrates to everybody, possibly himself included, that as a baby feeder he is a failure.

The exact rôle of the Shiga-Flexner bacillus in summer diarrhea is still under consideration. The organism was found in 62 out of 64 consecutive cases examined at the Vanderbilt Clinic.[6] These cases presented all the clinical types, from the mildest intestinal indigestion to severe colitis. Twenty per cent. of them were breast-fed, and of the fatal cases a large number showed no evidence of profound structural lesion.

Flexner and other workers in this field believe that the bacillus of dysentery produces the primary lesions early, and the subsequent pathological change is the result of a mixed infection. This being the case, the antidysentery serum of Flexner, in order to be of much virtue, should be given early and before the usual mixed infection and anatomical changes occur. Holt[7] reports use of the serum in eight cases, two of which were moribund. In three no effect was seen, and in the other three improvement was strikingly apparent.

Zahorsky[8] concludes the report of his experience with the statement that monovalent antidysentery serum is too uncertain for general use, but the polyvalent serum should be given in all cases of summer diarrhea.

Hastings[9] concludes his report of the *Bacillus dysenteriæ* in Boston and vicinity with the statement that no "positive conclusions can be drawn from our experience with the serum." "We are confident that no harm was done." The judicious employment of gelatin[10] and olive oil[11] makes an important addition to the well-recognized management of ileocolitis.

The serum treatment of typhoid fever has received considerable encouragement from Josias,[12] who reports fifty cases with a mortality of 4 per cent., while during the same period other cases treated in the usual manner gave a mortality of 14.2 per cent. When injected at the onset, the dose given was one cubic centimeter to every thirty kilograms of weight. In one-third of the cases the temperature descended on the day of injection and continued to fall until convalescence. Patients inoculated before the seventh day made a quick recovery. In a few the treatment seemed to have no influence whatever, and in young children the injection was sometimes followed by severe abdominal pain that continued for several days, giving suspicion of peritonitis.

Einhorn[13] recommends early injection, even before diagnosis is certain. In his cases the treatment was instituted from the ninth to the fifteenth day. He notes the reduction of temperature from one to two degrees and the general improvement of the sensory and nervous symptoms. De Rochemont[14] reports his experience with Jezz's serum, and concludes that while wonderful cures can not be cited, in every case the course was modified and rendered milder, though not shortened.

Pertussis has received its annual allotment of therapeutic agents, all of them of inestimable value in the hands of the originator. Arnheim makes the remarkable statement that the "paroxysms are to be considered a healing process by

mechanically removing the specific bacteria." Most authorities agree, however, that the paroxysm is the most distressing and the most dangerous part of the disease, and treatment directed to its relief is rational.

Formaldehyde[15] in from one-half to one per cent. solution, sprayed into the pharynx once a day; two per cent. solution of flouroform,[16] given in doses of from 100 to 150 grams daily; and calcium sulphide[17] in .03 gram doses every hour or two until the breath smells of hydrogen sulphide; are among the remedies receiving much support.

Manipulation of the lower jaw after the method of Naegeli,[18] will control the paroxysm in most instances in older children. Mothers and attendants should be instructed in this procedure. The control of the laryngismus relieves the usual vomiting and resulting emaciation, and with the supportive measures, good food and fresh air, meets the indications.

The fresh air treatment[19] is emphasized in the records of the Edinburgh Hospital. Of 74 cases treated indoors 51 died, a mortality of 66.9 per cent. Of 76 cases treated out of doors, partly or entirely, 24 died, a mortality of 31.5 per cent.

Dr. Mallory's[20] finding a series of bodies in the skin and superficial lymph spaces of four patients who died in the eruptive stage of scarlet fever, is far from proving the etiological factor of this disease. Dochle,[21] twelve years ago, described a peculiar variety of protozoa which he found in the blood of patients suffering from some of the eruptive diseases, among them scarlet fever. His findings were never confirmed.

We do know, however, that the streptococcus is present on the tonsils in almost every case; in the blood in 15 per cent. of the cases during life, and in 80 per cent. after death.[22] It has not been found in the blood before the third day. In fulminating cases the organism may not be demonstrable, but when uncomplicated with streptococcemia, scarlet fever usually runs a mild course. The streptococcus is generally accountable for the severity of the disease, especially the complications and sequelæ, and these complications can be prevented by the early use of an efficient serum administered in sufficiently large doses.

From the literature of the past twelve months I have collected 384 reported cases, and about double that number mentioned where the antistreptococcus serum has been administered in this disease. The largest number reported by any one observer was 112 cases treated at St. Anna Kinderspital by T. Escherich.[23]

In order to test the merits of the serum, Escherich employed it only in severe cases in which the toxic symptoms predominated. In doses of from 100 to 200 c.cm. early injected, he claims the serum acted almost like magic. In from four to twelve hours the temperature fell, the pulse and respiration slowed and the exanthema faded. The temperature remained normal in favorable cases, and the eruption disappeared on the following day. In less favorable cases there was some slight rise in the temperature of short duration. In later cases with necrotic pharnyx, glandular enlargement and other complications, the injection was without value. The mortality was reduced one-half. The summary of his cases is as follows:

Of 38 cases injected on the first and second day all recovered; of 27 cases injected on the third day two died, mortality 7.4 per cent.; of 23 cases injected on the fourth day four died, mortality 17.4 per cent.; of 20 cases injected on the fifth day six died, mortality 30 per cent.; of four cases injected on the ninth day two died, mortality 50 per cent.

Escherich believes the day not far distant when antistreptococcus serum will stand in the same relation to scarlet fever that antidiphtheritic serum does to diphtheria.

The summary of the changes noted by the various clinicians can be stated briefly as follows: Fall in temperature, decrease in the frequency of the pulse and respiration, and an improvement in the tension and rhythm of the former, clearing of the sensorium, prevention or amelioration of complications and rapid convalescence.

A polyvalent serum, containing the antibodies of human streptococci, is the only one to be depended upon. The serum appears not to destroy but to reduce the virulence of the organism, thus enabling the tissue cells to become more energetic in defense, indirectly favoring phagocytosis and absorption.[24]

Early use of the serum is to be recommended in all cases of scarlet fever, and in all other diseases where the streptococcus is playing a primary or secondary rôle. Smith[25] reports use of the serum in a series of smallpox cases with excellent results.

Widowitz[26] reports the use of urotropin in 102 cases of scarlet fever without a single case of nephritis. He gives from .05 to .5 grams, according to the age, during the first three days of the disease, and again at the beginning of the third week for another three days.

Seiffert[27] has had some remarkable results from the employment of lumbar puncture in uremia occurring in scarletinal nephritis. In several cases he withdrew from five to thirty cubic centimeters of spinal fluid. Cases with loss of consciousness and stertorous breathing recovered consciousness in thirty minutes after the operation and subsequently recovered entirely.

The therapeutic suggestions and clinical observations of chorea minor have been about as important and conclusive as the pathological[28] and bacteriological findings.

We are constantly confronted with individual predispositions in children, born of neurotic stock, that are influenced by the slightest degree of nerve pressure, whether it be of school, adolescence or reflexes; and an infection or intoxication that would pass unnoticed in well-balanced nervous systems, would in these produce chorea or many other nervous phenomena.

The association of chorea and "rheumatism"

can be demonstrated in the majority of cases if kept under observation sufficiently long. The rheumatic complication of the first attack is frequently overlooked, because the heart is not carefully examined, the fever of a low degree is unobserved, the "growing pains," enlarged tonsils and case history is not considered. Microorganisms of the streptococcal group have been found in both of these disorders,[29] and may possibly have had something to do with the individual cases examined, but we have no proof of their constancy or their specific character. The report of a single case[30] that resisted all treatment until fifteen injections of antistreptococcus serum was given, only proves that this particular case was either due to or complicated with the streptococcus, that the serum used must have been of low potency, and that it would be well to examine the blood of all these cases and use a serum when indicated.

Inasmuch as we find chorea complicating pronounced anemia and infectious diseases, not associated with rheumatism, we are led to believe that many organisms and ptomains are capable of producing these same muscular spasms. Where there is any indication of "rheumatism" in these cases, treatment should be begun with sodium salicylate from .2 to 1 gram dissolved in a glass of water and taken two hours after meals.

The colossal doses and method of administration recommended by Lees[31] would put any stomach out of commission before it is time to take up the arsenic treatment. Smith[32] uses 4 c.c. doses of the fluid extract of ergot every three or four hours, in children of seven years, and continues the treatment for weeks if necessary. In stubborn cases he increases the dose to 6 c.c. and adds a moderate dose of strychnine. He regards this treatment as more reliable than the arsenic treatment, but the report of only two cases does not justify the conclusion.

In the management of pulmonary disorders there is nothing so important as fresh air, sunshine and isolation. As 50 per cent. of the pneumoniæ are due to bad air, more than half of these secondary inflammations should be avoided.

Many of these cases do well on the cold air treatment,[33] but infants and young children must have their air at 68° F. to prevent the irritating cough. The early respiratory disturbances, with dryness and congestion, are benefited by inhalations[34] of steam carrying eucalyptus, creosote, tinct. benzoin comp. and aromatics. If these inhalations are given under a tent and there is a lack of fresh air, oxygen may be administered simultaneously.

These cases must be supported, but not overfed, by a suitable amount of easily digested or predigested food, with an abundance of water. As long as the fever is doing no damage and the child is comfortable, it should be let alone. Cold applications can usually be limited to the head. The tepid sponge bath and hot mustard foot bath are excellent measures for equalizing the circulation.

The use of poultices, packs and jackets is dying out with the good old grandmother. Mild stimulating applications, as that suggested by Acker of equal parts of the oils of olive, amber and clove, are more pleasant and efficacious, and have none of the objectionable features.

The potassium iodide treatment of pneumonia is lauded by Altschul,[35] who claims not to have had a death in twelve years, out of 62 cases. His method is to give an initial dose of 10 or 15 grains, increasing it by 5 to 10 grains, every two or three hours day and night, according to the severity of the case, until defervescence is well established. In this manner he has given from 1,000 to 3,000 grains of the drug daily in a 50 per cent. solution in milk. One patient, a child, received over half of a pound of the drug in two days (2,100 grains daily for two days) without showing any signs of intolerance.

In cerebrospinal meningitis lumbar puncture, withdrawal of fluid by aspiration, and injection of 3 to 12 c.c. of a 1 per cent. solution of lysol, after the method of Seager,[36] omitting the canal washing with normal salt solution, has proved of great virtue in three cases reported by Manger,[37] and is considered a hopeful measure by Franca.[37]

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Fat in Pigments.—By employing specific stains for fatty tissue, E. Sehrt (*Virchow's Archiv*, Vol. 177, No. 2) could detect the presence of fat in all pigments, even in those causing brown atrophy of the heart and liver. Lutein of the ovary is the only pigment in the human body which may be classed among the liprochroms, since it gives the sulphuric acid and the iodine reaction. Even after tissues have been subjected to fat-solvents for a long time, the sudden reaction will still be positive, which is not the case with the other pigments.

HEREDITARY CHOREA IN EIGHTEEN MEMBERS OF A FAMILY, WITH A REPORT OF THREE CASES.

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Many cases of hereditary chorea have been reported since Huntingdon, in a few happy sentences, described the symptoms, but it is somewhat unusual to obtain a family history of eighteen individuals in four generations affected with the disorder. Doubtless among French-Canadians, whose fecundity is proverbial, the proportion of the diseased to the healthy is not excessive, nevertheless the report loses little of its interest on this account.

In obtaining the family history from the wife of one of the patients, precautions were taken to corroborate her statements by questioning the neighbors, and comparing her story with the account given by the first patient examined. The memory of the latter could not be relied upon, but his narration, as far as it went, agreed perfectly with that related by his sister-in-law, who furnished further details.

Jean Baptiste J., farmer, was the first member of the family affected, as far as can be ascertained. The trouble began late in life, and after having suffered from typical choreic movements for twelve years, he died at the age of eighty years. He was married and had a family of fourteen, and of these five daughters and one son were seized with the same malady.

Taking these children in turn, we come to the second case, Mme. P., who died at an advanced age, showing, besides the movements, well-marked mental symptoms. The onset of the trouble was in her forty-seventh year, and she became gradually worse for some ten or twelve years, when she was removed to the asylum at Longue Pointe. She was married and had a family of eight, all healthy so far as is known.

The third case, Mme. D., also died at the asylum at about eighty years of age. She had suffered for some ten years before admission to the institution, and lived for five or six years after being immured. The number of her family could not be definitely ascertained, but it was large, and one male was affected.

The fourth case, Mme. B., has a history very similar, for she died five years after being placed in the asylum, at the age of seventy-five years. She had a large family, all healthy.

Mme. R., the fifth case, died at the age of sixty-five years, after suffering for fifteen years from choreiform movements. The mental disturbance was not marked. She was married and had one son and two daughters. Of these one daughter had the disease, and she in turn had a son and daughter affected.

Mme. C., the sixth case, died at the age of seventy-seven years, after having had well marked movements for twenty years. She had eighteen children, and of these six males have chorea.

J. B. J., junior, the seventh case, is the only one giving a doubtful history. He was the youngest child, and at present is some forty years of age. He began to be troubled with jerking movements of the arms and face which continued to be well marked for two years. He consulted some physician shortly after the onset, who put him on tonic treatment with the happy result, or coincidence, of the entire cessation of the manifestations of the disease, and from this time he has been perfectly well. He is married and has six healthy children.

Thus far we have been dealing with the family of J. B. J., senior. Let us now turn to their children.

The eighth case, son of Mme. D., became affected at the age of twenty-five years, and he is known to have had well-marked twitchings of the extremities for several years before leaving for the United States twelve years ago. Nothing further can be discovered of his subsequent history.

The ninth case, a daughter of Mme. R., died at the age of forty-five years. The movements had been very violent for fifteen years before death, and they were said to have been first noticed at the age of twenty-five years. She was married and had one son and one daughter with the disease.

Joseph C., the tenth case, oldest son of Mme. C., is a man aged sixty-five years, and for the past ten years has had the typical symptoms of Huntingdon's chorea, while for several years he has been mentally weak. He is married, but has no children.

The eleventh case, Jean Baptiste C., son of Mme. C., was first seen and examined on April 16, 1904. He is a farmer, aged sixty-three years, married, with a family of eighteen children, with no history of rheumatism, tonsillitis or chorea. As a young man he was considered to have exceptional ability, although uneducated. His general health is good and his appetite hearty, as he is hungry "all the time" and very fond of dainties. The present trouble began some twenty years ago when his wife noticed that he was unusually loquacious, and anxious to lead the conversation upon every occasion, at the same time he became restless at night, and very soon movements began in all four extremities, although at first the arms appeared to be more affected than the legs. The twitching was invariably increased at night. Shortly afterward he became capricious and easily angered, also quite malicious, pinching his wife intolerably. He speedily became worse and his whole body and face began to jerk as well as the extremities, his speech became incoherent, his memory failed and he began to have peculiar ideas, at times he was unmanageable and would not wash himself or permit any one to touch him for this purpose. He has not done any work for fifteen years and even before this time he was useless for hard labor.

Examination.—The patient is of slight build, rather under middle height and somewhat

stooped. Musculature is below the average, complexion clear, hair gray. He has a sly, silly expression, and winks and nods as if having a joke at the expense of one of the company. His movements are bizarre in the extreme and are exaggerated when in the presence of strangers. His body twists in and out at the hips and knees, and his feet shuffle as he staggers round the room like a drunken man, while his hands, wrists, and arms are continually writhing and jumping with a motion which suggests a combination of athetosis and chorea. At the same time the expression of his face changes from a smile and a wink to a silly vacant stare or a look of low cunning. The movements are said to come on at intervals during sleep, frequently without waking him.

The gait is sluggish, awkward and staggering, and he walks with a broad base, although rarely with his eyes directed to the ground. The will seems to have but little influence upon the movements, and the state of his clothes amply testifies to the fact that he spills most of his food while conveying it to his mouth. His mental condition is peculiar in that he has intervals during which his memory is fairly good, and frequently at such times he realizes his present state and melts into tears pitying his miserable lot. Then follows a period of indifference and subsequently he becomes smiling and jolly, then boisterous, with a desire to be mischievous, but even in his more violent moods he is easily frightened. During one examination lasting about two hours he showed all the phases above mentioned. At times he has strange fancies, as, for example, about a year and a half ago he began to grow a beard, although he had been clean shaven all his life. On being asked his reason, he said that Christ died with a full beard, and that if he died in the same condition he would also go directly to Heaven.

His speech is markedly indistinct and muttering, and very difficult to understand. It is also jerking, though not syllabic, several words being ejected at a time, frequently followed by a cough or contortion of the face. His articulation varies a good deal with his state of mind, for while in a rational mood every word was enunciated with distinctness, a little later none but his wife and intimate friends could understand what he meant.

He appears to understand very well what is said to him, and makes great efforts when asked if he remembers a name or event, and if given time is occasionally able to recall the required information. He has never been able to read or write, so that these functions could not be tested. His sleep is poor and very much interrupted by the movements, although, as before mentioned, he often remains asleep while they are going on. The muscles are small, but firm, and their voluntary power fairly good. His grip is irregular and much increased during spasm. Sensation, as far as one can judge, is normal. The knee-jerks are active, and there is no ankle or rectus clonus. There is no Rhomberg's sign. He is able to swallow without difficult, once food has reached his mouth. His eyes are clear, blue in color, and the pupils are equal, normal in size, and react to light and accommodation. There is no nystagmus. The pulse is of good volume and tension, regular, and the arteries are in fairly good condition for a man of sixty-three years.

The twelfth case, Basil C., a man of fifty-four years, has shown definite signs of the disorder, in movements of the extremities, for the past six years. He is married and has two girls and one boy in good health.

The thirteenth case, Francois C., was the first of the series to come under observation. He presented himself at the Neurological Out-Door Clinic of the Royal Victoria Hospital, Montreal, on December 17, 1903, and his history at once prompted an excursion to his native village to examine into the truth of his statements. He is a man forty-nine years of age, married, with eleven healthy children. He enjoyed good health until ten years ago, when he suffered with severe headaches, which continued off and on until the beginning of the present illness, some four years ago. The patient's habits are regular, he has taken alcohol in moderation and denies all venereal trouble.

The movements were first seen in the legs, soon followed by involvement of the arms and face. The onset was quite slow, and the patient has seen little or no change during the past three years. The movements are worse at night, and sleeplessness is the most annoying symptom.

Examination.—The patient is a man of medium size, fairly good musculature, and looks rather older than the age stated. His expression is intelligent, though at times ludicrous from the contortions produced by the disease. There is an almost constant jerking of the shoulders, upper arms, head and neck. The hands are comparatively steady, and the facial muscles remain free from movements for several minutes at a time. The legs are also fairly steady while the patient remains seated, but the gait is slightly staggering when he attempts to walk about. The extremities on the left side are more markedly involved than those on the right. Voluntary power is good, but the grip is always increased with each spasm, and in consequence is irregular. There is a certain amount of voluntary control of the movements, and co-ordination is good. There is no Rhomberg's sign, and no disturbance of sensation. The knee-jerks are active and the plantar reflex normal. There is no ankle or rectus clonus. The pupils are equal, of normal size, and react to light and accommodation. The external muscles are normal, and there is no nystagmus.

The cardiovascular and other systems are normal. The mental condition is fairly good, but the memory is defective and his relations state that he is becoming somewhat unreasonable and irritable when at home. This patient has been kept under observation for the past five months, and has shown but little change for better or worse. A small dose of bromide at night has enabled him to sleep better, but treatment has, as usual, been of no permanent value.

The fourteenth case, Narcisse C., aged fifty-three years, is one of the most interesting of the group. The first signs were noticed at an early age, for the symptoms have been present for over twenty years. He became violent very soon after the onset, and jealousy of his wife appeared the first notable evidence of mental derangement. He frequently flew into violent passions, and on one occasion when at church he pulled his wife around the building by the hair of her head, much to the consternation of the peaceful "habitants." He was confined in the asylum, but managed to escape, and for eighteen days nothing was heard of him, but he gradually worked his way from Quebec to Montreal, a distance of 180 miles, and suddenly appeared among his relatives, accusing them of immuring him without cause. He soon returned to his old habits of violence, and was once more placed in the asylum, where he still remains. He had fourteen children, twelve of whom are living, but they were sent away from home, as the mother thought that the disease was catching, and their present condition is not known.

Antoine C., the fifteenth case, is about thirty years old, and has had the movements for three years. He has a family of eight, all in good health.

The following three cases have appeared in the fourth generation:

The sixteenth case, a granddaughter of Mme. R., affected at the early age of twenty, has had the disease for about two years.

The seventeenth case, her brother, about one year younger, developed the movements about the same time.

The eighteenth case, Jean Baptiste C., Jr., son of J. B. C., has just begun to show signs of the disease, and is the third case examined. He is a young man, aged twenty-six years, a farmer, single, and has always enjoyed good health, although never robust, heavy labor being very fatiguing. The trouble began to manifest itself about a year ago, when muscular twitchings of the arms, with restlessness, were noticed at night. His sleep became disturbed, and he would frequently wake up at night with the jerking of his body and extremities. He has become slightly but gradually worse, and at present the movements occur at intervals in the daytime, as well as at night.

Examination.—The patient resembled his father in build and musculature, in that he is slight and below the middle height. His face has rather a sullen expression and he looks rather stupid, chiefly on account of the position of his eyelids, which are kept half closed. The lids are constantly winking, giving him the appearance so characteristic of albinos, when they are exposed to bright daylight. This peculiarity was well demonstrated a short time ago, when he had his photograph taken, for in all the negatives his eyes were closed as if he were asleep. His gait is normal, although rather slow and careful for a man of his age. A few twitching movements of the left arm and the strange rapid winking of the eyelids are all the motor phenomena noticed in the examination during the daytime, the muscular power being good.

In answering questions the speech is slow and he seems to require a little time to think before replying, but articulation is perfect and uninterrupted. The knee-jerks are present and there is no clonus. His eyes are blue and the amount of pigment in the iris appears to be normal. The pupils are equal, of normal size, and react to light and accommodation, and the external muscles are functionally perfect. There is no nystagmus. The other symptoms are normal.

There are a few points of interest in the series which may be worthy of attention. First, the number of children in the families. The occurrence of Huntingdon's chorea in large families was pointed out some years ago, but in the case of French-Canadians ten or fifteen children is not at all an unusual number, and I think that little stress can be placed upon this point. Then the descendants appear to develop the symptoms earlier than their parents. This is not usually an accepted characteristic of hereditary chorea, but it seems to be fairly constant in this series. Of course, the contention may with truth be urged that a great many of the children are yet young, and may still become affected, thus raising the proportion. The distribution among males and females is, as usual, about the same, and no cases were found in which a generation had been skipped. The increase in violence of the twitching at night with resulting sleeplessness, in these patients examined, was very marked, and indeed the most distressing symptom, this together with the continuance of the movements during sleep, though not unknown, is not usual.

The pathology of Huntingdon's chorea is quite as indefinite as that of Sydenham's chorea, and the many findings by different investigators seem to leave us in as great darkness as before, but I think that the hint given by Sir W. Gowers in his able article on abiotrophy should form a solid foundation for future study. The occurrence of the disease in groups which have the tie of consanguinity, the slow development of the symptoms, usually in middle life, the absence of adequate cause, and the correspondence of the outward manifestations to the functions of the cortex, all point to an inherent defect in vitality of the structures forming the gray matter of the brain; while the comparative or absolute freedom from disease of the rest of the body suggests that the disease is limited to this definite group of cells. These points justify the designation "abiotic" to this disease, and by fully understanding the term we can form a definite idea of the course and prognosis of the malady.

Evidently the whole cortex is not involved at once, nor is it always involved in the same manner, as in one of the cases cited the mental symptoms were among the first to appear and they became greater as the process advanced, while the motor symptoms were subordinate. In another case the advance upon the arm and face areas were subsequent to a well-marked speech dis-

turbance which might well be due to changes in the phychic areas. In a third case the legs were primarily affected, although the arms and head very soon showed a greater agitation. These facts point to a general involvement of similar neurons or parts of neurons, advancing gradually, according to the lines of the least resistance.

Treatment in all conditions of this kind must from the very nature of the process be unsatisfactory, but a few cases appear to have been arrested spontaneously or otherwise, and the history of No. 7, the only doubtful case of this series, may offer some slight encouragement for one to attempt to check the progress of this form of abiotrophy of the nervous system.

INFLUENZA IN CHILDREN.

BY KENNETH E. KELLOGG, M.D.,
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It is not over fourteen years since the first extensive epidemic of influenza overran this country, and since that time the disease has been more or less constantly with us. It was at first considered by the medical profession of little more importance than an ordinary coryza. From that time until this, however, we have grown more and more to look upon it as an exceedingly serious condition, until now, when we realize that instead of a local and temporary process, it is a universal affection and far reaching in its effects. It is probable that even at the present time many laymen fail to realize the fact that influenza is a highly contagious affection, and one of the most virulent of the acute specific diseases.

In addition to the reviewing of the general manifestations of the disease as it appears in children, and outlining the general treatment, it is the object of this paper to emphasize the extreme seriousness of the condition and to make a plea for the enlightenment, *through the medical man*, of the *public* on the question.

The disease as it exists in children presents a somewhat different aspect and runs oftentimes a more protracted course than in adults. The Cannon-Pfeiffer bacillus, which is admittedly the specific cause of the disease, is a small, slender, non-sporing, non-motile, aerobic organism which has the peculiarity of developing only upon cultures which contain blood-coloring matter.

The germ has very little capacity for life outside the diseased body, dies very quickly in water, and is destroyed by rapid drying. Therefore it is believed that it is not propagated by the air or water as much as it is carried by the catarrhal secretions from the afflicted patient. Other organisms, especially the pneumococcus and streptococcus, are often associated with the influenza bacillus, both in the acute and chronic cases. Pfeiffer has said that the influenza bacillus may be found in the catarrhal secretions many months after the disease has apparently subsided. Under certain conditions, therefore, the excitant with which to start an epidemic is frequently present.

The detection of the influenza bacillus in the sputum or in the blood, would appear as important a factor in the diagnosis of influenza as the demonstration of the tubercle bacillus in tuberculosis or the diphtheria bacillus in diphtheria.[1] Whereas bacterial diagnosis is not a simple process, it is sufficiently definite to allow of its being resorted to by the general practitioner. In fact, the bacterial diagnosis of the influenza bacillus involves a less complicated technic than does the study of the tubercle bacillus.

While we are accustomed to think of the nasal mucous membrane as the home of the influenza bacillus, it is becoming more and more evident that this micro-organism behaves like so many others, that it wanders, and has been found in many tissues, both during life and at autopsy. Thus the germ has been found by Hogersted in the pericardium and endocardium, and by Flexner in the central nervous system, and Abbott claims that it has been detected in the bodies of the leucocytes.

The catarrhal symptoms are probably due to the presence of the bacillus itself, and the immediate effects of the toxin are shown by symptoms directly referable to the cerebrospinal center. The remote effects are manifested by the lowered tone of the nervous system and other tissues, producing in the patient a predisposition to many subsequent diseases.[2]

At autopsies of patients dying from the disease the nervous system is found much congested. There does not seem to exist any immunity to the disease, for all ages are susceptible. Much depends, however, upon the vital resistance of the individual, and upon the previous condition of the mucous membranes.

Three types of influenza have been described by some observers, as follows: The nervous type, the gastro-intestinal type and the respiratory type. Frequently one or more of these exist in combination, so that the disease, at times, assumes many phases and is exceedingly difficult to recognize, so that only by process of exclusion can one arrive at a correct diagnosis.

Holt, in 1895, at an annual meeting of the American Pediatric Society, reported a fatal case in a young infant, although he fails to mention it in his text-book.

Kerley, of New York, reports two fatal cases occurring in young infants.

Case I.—James F., aged six months, healthy, steadily gaining in weight, was taken suddenly with a cough, diarrhea and vomiting. Temperature first day from 99° to 101° F., second day from 99° to 101° F., third day from 103° to 105° F., fourth day from 101° to 103° F. Died on the evening of the fourth day.

Case II.—Child, aged fifteen months. Previous history negative, gaining steadily in weight, was taken suddenly with diarrhea, vomiting and a slight cough. Temperature first day from 102° to 103° F., second day from 103° to 104° F., third day from 101° to 101.6° F. Died on the evening of the third day.

Physical examination in both of these cases revealed only a mild bronchitis. The gastro-intestinal symptoms were those of a mild catarrh. The infants were both severely prostrated from the first and lay in a semi-comatose condition, presenting the appearance of having been stricken with a most violent poison; pulse 150 and upward, until it could not be counted; eyes sunken and rolled up; pallor extreme; face drawn and pinched; pupils dilated and muscular twitchings present. Both children were carefully watched by their nurses so that drugging was out of the question. These two cases exemplify the severe nervous system type.

In addition to the commoner symptoms of an acute catarrhal inflammation which are usually, but not always, present, there exists a band of redness upon the palatine arch, the uvula and tonsils not, as a rule, being involved. Again there is frequently present an enlargement of the papillæ of the anterior portion of the tongue.

The catarrhal symptoms are not so universal in the child as they are in the adult, but in a measure are characteristic, and are usually accompanied by an enlargement of the cervical and submaxillary glands. The fever of influenza is a strikingly irregular one, being sometimes present, sometimes absent, high in the morning and low in the evening on one day and vice versa on the next. In fact, the disease may run its course with a subnormal temperature, and in infants this is fairly common. There is a type of the disease which runs a continuous fever for a number of weeks. This simulates more or less closely typhoid fever.

Grippal infections of the small bronchial tubes in feeble infants is a very serious complication. It manifests itself by great dyspnea and cyanosis, the respiratory murmur at times being hardly audible. This infection of the lung tissue, however, is not common.

In the nervous type there appears to be more or less of a constant symptom-complex shown by peevish actions on the part of the child and the manifesting of a desire to be let alone, while it exhibits an irritability combined with an aching of the limbs shown by crying when being held or pressed upon, drowsiness, and occasionally symptoms of meningeal irritation, such as slight muscular twitchings, or sometimes well marked convulsions may be present. The temperature runs an irregular course, varying from subnormal to 106° F. The respirations may be rapid and accompanied at times by cyanosis. The prostration appears to be out of all proportion to the other symptoms, and may be extreme from the first.

The gastro-intestinal infection is evidenced by vomiting and diarrhea, being as a rule not serious; on the other hand, indeed, they may be construed as one of Nature's methods of elimination. This effort on the part of Nature is also demonstrated by the occasional eruption which simulates that found in scarlet fever. Purpura not infrequently occurs, and so may edema, both probably toxic in nature.

Many times there is a co-existing catarrhal inflammation of one or more of the accessory sinuses. This, by reason of secondary infection, may result in a purulent inflammation. This condition is evidenced by either the discharge of a mucous or muco-purulent character, especially from one side of the nose, intermittent, but at times profuse. On examination pus is seen discharging beneath the middle turbinated bone. Pain is sometimes elicited by pressure on the supra- or infra-orbital region, and is generally present over the frontal sinus. Occasionally there is marked swelling of the lids and surrounding tissues. A more common complication, however, is an extension into the ear through the Eustachian tube, resulting in a catarrhal or purulent inflammation of that organ. This complication has been a strikingly common one during this winter's epidemic.

The mastoid process is frequently involved, and, owing to the cartilaginous character of the structure of the roof of the ear in infants, an extension into the meninges is by no means rare. Postauricular abscesses are frequently found, and are much more common in children than in adults.

F. Forchheimer has written on the acute dilatation of the heart in children during the course of influenza. He has reported several cases. He believes that there are two forms of dilatation accompanying this disease; one progressively produced by the action of the toxin upon the nervous system and possibly upon the myocardium, and another occurring in conditions materially interfering with the flow of blood because of mechanical obstruction.

Nephritis accompanying influenza in children is a rare complication, but does occasionally exist, and Freeman[3] has reported a case of acute hemorrhagic nephritis following influenza in a four-year-old child.

Miller has subsequently reported forty cases of this nature. I have recently had two cases of acute exudative nephritis accompanying influenza in infants.

A pseudo-pertussis cough accompanying influenza in infants has come to be recognized as a fairly common symptom. This is often of a dry, non-productive, paroxysmal nature, closely resembling that found in whooping-cough. This was first reported by Forchheimer in 1900.

The diagnosis of influenza is usually arrived at, as before stated, by the process of exclusion. It is to be differentiated in children from malaria, measles, scarlet fever, diphtheria, whooping-cough, typhoid fever, pneumonia, ordinary catarrhal inflammation of the mucous membranes, cerebrospinal meningitis, acute inflammation of the lymphoid tissue in the nasopharynx and tonsillitis.

From malaria it is to be differentiated by its irregular course, by the absence of the enlarged spleen and the organisms of Lavaran in the blood, and furthermore the temperature of influenza is as a rule uninfluenced by quinine.

From measles it is to be differentiated by the time, appearance and location of the eruption of

the latter disease, the presence or absence of Koplik's spots, the course of the temperature and the existence in the community of an epidemic of one or more of the affections.[4]

From scarlet fever[5] the disease is to be distinguished by its characteristic eruption, which lasts longer and alternately fades and becomes more distinct, and, as a rule, does not appear as early as the eruption in scarlet fever. The character of the tongue in influenza is different from that seen in scarlet fever. In the former, small elevated purplish papillæ are seen on its anterior portion. Hematologists furthermore tell us that there is a leucocytosis in scarlet fever, while as a rule there is none in influenza.

From diphtheria it is to be distinguished by the absence of the characteristic membrane, but oftentimes it is only by the assistance of a bacterial examination that we are enabled to differentiate between the two diseases. Influenza in many cases begins with a bronchitis. The tongue has the character of the "raspberry tongue," on the palate are spots or stripes; the influenza membrane is yellowish white and is not placed upon a dark red inflamed membrane, as in diphtheria, but upon a tonsil of almost normal color. The membrane is not influenced by antitoxin.

From whooping-cough the absence of fever, the persistent and well-defined whoop and the history of the attack of the latter all serve to assist in the diagnosis.

From typhoid fever it is to be distinguished by its irregular temperature, which frequently is higher in the morning than in the evening, by the absence of the enlarged spleen, by the time of appearance and character of its eruption and by the absence of the positive Widal reaction of typhoid fever. Furthermore, the eruption of influenza covers a larger area and remains longer than that seen in typhoid fever.

From pneumonia it is to be differentiated by the absence of physical signs in the chest and also by the absence of leucocytosis. Furthermore, in pneumonia the characteristic diplococci in the sputum may be recognized by simple staining.

From the ordinary catarrhal inflammation of the mucous membrane it is to be differentiated by the intense prostration which is usually disproportionate to the other symptoms, and also by the presence of glandular swellings.

Cases exhibiting nervous symptoms and indicating meningeal irritation simulate closely cerebrospinal meningitis and only a bacteriological finding will reveal the true nature of the condition.

From acute inflammation of the lymphoid tissues of the naso-pharynx, the disease is to be distinguished by the previous history of the patient. Mouth breathing, disturbed sleep, night terrors, and snoring usually antedate an acute inflammation of the lymphoid tissues. Examination of the throat will frequently reveal the presence of adenoids and enlarged tonsils.

The onset of acute tonsilitis, in differentiation from influenza is more abrupt. The temperature is usually higher from the first, the tonsil is studded with whitish spots, but occasionally it is only by the aid of the microscope that we are enabled to distinguish between the two diseases.

In the treatment of the disease, its serious nature requires prompt and constant attendance, and its communicability calls for isolation. *The reckless exposure of the infected in influenza makes the disease so difficult to eradicate.* The child should be kept in a quiet room of uniform temperature and visitors or unnecessary attendants excluded. He should also be protected against drafts and chilling of the skin, but at the same time should be allowed plenty of fresh, pure air. The excretions should be received in strong antiseptic solutions, which should also be applied to the spoons, forks and plates. The patient should not remain too long a time in one room in order that reinfection may be prevented. The room should be thoroughly aired and disinfected after his departure. Owing to the intense depression of the nervous system, the rest should be complete and prompt and stimulating treatment administered from the first.

If suffering from an attack of a severely toxic nature the child should not be lifted or carried in the upright position. The function of elimination should be stimulated; the bowels freely opened by split doses of calomel, with or without castor oil, plenty of water given to promote diuresis, and at the outset a diaphoretic, in the form of a hot acidulous drink, should be administered. Hydrotherapeutic measures should be used; dry or moist heat, hot water or steam baths, or hot packs every few hours until a free diaphoresis is established. If the fever is high the cold pack may be superior, at the same time the feet and hands should be kept warm by hot water bottles or mustard baths. This cold pack might well be followed by a saline rectal injection.

To allay the nervous and muscular manifestations in the sthenic cases, phenacetin appears more desirable than opium. It should be given, of course, in small repeated doses. It is prompt in its action, has no cumulative effects, does not produce gastric disturbances, and has probably the least depressing effect of any of the antipyretics. In cases of collapse and evidences of toxemia a saline injection, as before mentioned, will tend to tide the patient over a critical period. *All measures which serve to depress the nervous system cannot be too strongly condemned. The stronger coal tar products, such as acetanalid, being distinctly contra-indicated.* The nerve depressing action of the toxins upon the great centers and upon the cardiac muscle prohibit the use of such drugs. The routine use of strychnine appears to be an important adjunct in the treatment of all these cases. I believe, however, that the condition frequently justifies much larger doses than are usually given.

The elimination of toxins through various channels should be constantly stimulated. It is possible that the coryza, the diarrhea and the eruption are simply expressions of Nature's effort of

elimination, and this effort we should respect and encourage rather than discourage. For this reason the writer does not believe in the routine use of opium in all cases, but only in those whose eliminative processes are otherwise sufficiently active.

Salipyrine is considered by a number of eminent authorities to be almost a specific in influenza in children. They give from two to four grains to a child from five to ten years old. Inasmuch as this drug, however, contains antipyrine it would seem to the writer much inferior to phenacetin.

For the catarrhal symptoms, and with a possible view of limiting an extension, a saline nasopharyngeal spray will be of service. In the administration of this spray, however, extreme caution must be observed lest infection be conveyed through the Eustachian tube. To avoid this the child's head should be turned upon its side and the uppermost nostril sprayed. The position should then be reversed and the procedure repeated. To combat a decided turgescence of the mucous membrane of the nose and throat an adrenalin chloride solution will allow a freer respiration and possibly limit an extension into the Eustachian tube and subsequent ear abscess.

When symptoms of ear involvment appear, and especially if bulging of the membrane occurs, a free and early incision followed by a mild and gentle irrigation of a warm bichloride solution should be practised. Where the symptoms of ear inflammation are exceedingly mild the use of an ice-cap, and the application of leeches in some cases may be permissible, serving to limit the process, but in the vast majority of instances an early incision is necessary. Lanolin, in which is incorporated ichthyol, appears to be especially beneficial to the glandular swellings of influenza. The bronchopneumonia and gastro-intestinal types call for treatment which is little different from the treatment of these conditions when not produced by influenza. Cases running a subacute course are frequently benefited by a change of air.

I think it is now generally accepted that many acute infections; rheumatic fever, measles, scarlet fever, whooping-cough, influenza and others gain entrance into the system through the lymphoid tissues. Consequently it behooves us, as a preventive measure, to see to it that our children's throats are kept in as nearly normal condition as possible, to have adenoids and hypertrophied tonsils removed when they are sufficiently large to produce symptoms, in order that the subsequent infections may be at least modified in severity if not altogether prevented.

The children should sleep in well-ventilated rooms; rooms exposed to the sunshine and fresh air by day and those which allow plenty of fresh flowing air by night. They should be properly but not overclothed, their wrists, hands and feet should be kept constantly warm, they should receive plain but nourishing food at regular intervals, their stomachs should be kept in the best possible condition, they should abstain from sweets, tea and coffee, and should be allowed to spend a number of hours each pleasant day out of doors. Fatigue, however, should be prevented.

During recent years the morbidity of tuberculosis has increased in a measure, no doubt owing to the vulnerability of the mucous membrane following grip. In many postinfluenzal glandular swellings in children is the tubercle bacillus waiting only for an exciting cause when it may multiply and in time produce a fatal tuberculosis.

In dealing with a disease which may be so profound in its immediate, far reaching and disastrous in its remote effects, it is the duty of the members of the profession, who are guardians of the public health, to sound a warning note, especially during epidemics; to teach the public to look upon the disease in its true light; to teach that it is a highly communicable disease, a disease that at any time may assume a rapidly serious aspect; a disease which produces a fertile soil for many subsequent infections; and one which may result in chronic invalidism.

How few mothers are aware that their little one suffering from a pulmonary tuberculosis or a chronic otitis, or an endocarditis, one or more of the many diseases of childhood, subacute or chronic, has had its way paved by what was first considered "simply a grip cold."

In instituting treatment for the immediate condition we fulfill but half of our duty. Surely preventive medicine is equally important and productive of results as curative, and to no other disease can preventive medicine be applied with richer returns than to influenza.

REPORT OF A CASE OF ADDISON'S DISEASE TREATED BY MEANS OF SUPRARENAL EXTRACT AND ADRENALIN CHLORIDE.

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That portion of the English, French and German literature devoted to the consideration of the so-called specific treatment of Addison's disease by means of preparations of suprarenal gland, has been admirably digested by Dr. Edward W. Adams, of London, whose paper in the *Practitioner* for October, 1903, includes an analysis of 97 cases. It is probably the most complete exposition of the subject in the language.

Seven of the 97 patients were made distinctly worse by the treatment, 43 derived no real benefit, 31 showed marked improvement and 16 were permanently cured. The methods of applying organotherapy in Addison's disease, Dr. Adams groups under five heads. A sixth and newer, but comparatively untried, method follows as a logical sequence and involves the use of such preparations of suprarenal gland as adrenalin chloride.

1. *Suprarenal Grafts.*—Three patients have been treated by this method and all died. One was a child of fourteen, into the cellular struc-

tures of whose abdominal wall the suprarenal glands of a dog were grafted. Death resulted on the third day and was preceded by elevation of temperature and coma. The two other patients received subcutaneous grafts of the suprarenals of a dog in both sides of the abdominal wall, local anesthesia being employed. Both died within twenty-four hours with symptoms of hyperpyrexia and prostration. Such speedily fatal results, while due no doubt, in these three instances, to the effect of the grafts, are not unknown in Addison's disease, no matter what the treatment. Addison himself, and, since his time, Dieulafoy, Anderson, Bradbury and Osler have called attention to the occurrence of sudden death in this condition. Dieulafoy, Anderson and Bradbury have noted the more frequent occurrence of sudden death in Addison's disease without pigmentation.

2. *Fresh Gland by the Mouth.*—Nine patients have been treated by this method. One became worse, one derived no real benefit, six were markedly improved and one permanently relieved.

3. *Hypodermic and Intramuscular Injection.*—Eleven patients have been so treated. One became worse, six derived no benefit, three were markedly improved and one permanently benefited.

4. *Fluid or Solid Extract of Suprarenal Gland by Mouth.*—Sixty-one patients were treated after this method. Two were made worse, 32 derived no benefit, 17 were markedly improved and ten were permanently relieved.

5. *Mixed Methods.*—Five patients have been so treated. Three were markedly improved and two cured.

6. *Adrenalin Chloride or Similar Preparations of the Active Principle of Suprarenal Gland.*—There is but one recorded case of Addison's disease treated by this method. The case in question is reported by Raven in the *British Medical Journal* for January 16, 1904. The patient was a middle-aged woman who, in 1893, developed some pigmentation of the skin after an attack of scarlet fever. In the course of the next four years the degree of pigmentation increased and she suffered numerous syncopal attacks, diarrhea and vomiting. In 1901 she was treated by tablets of the extract of suprarenal gland. Finally she had a number of convulsions, the pulse became very rapid and small and coma supervened. The pigmentation was now quite general and involved the buccal and other mucous membranes, and emaciation was marked. The heart sounds, however, were good. At this moment she was given five minims of a 1-1,000 solution of adrenalin chloride three times a day, and after a week the pulse became stronger, consciousness returned and the convulsions ceased. After the lapse of two weeks the dose was increased to ten minims three times a day. At the end of a month the pulse was slower and more full, and the pigmentation had distinctly decreased. The dose was increased to 20 minims and then to half a dram three times a day, but had to be reduced now and then. The patient improved steadily and after eleven months was able to indulge in moderate exercise, the pigmentation having faded distinctly and the syncopal attacks and gastro-intestinal disturbances having ceased entirely.

The universal adoption of this or of similar substances in the treatment of Addison's disease would seem to be justified, since they more nearly approach the fulfilment of the ideal method of introducing into the general circulation that principle which is lacking, and upon whose absence the condition described as Addison's disease would seem most likely to depend. However true this may be, there are those who would weight their use with the objection that absorption by mouth does not occur and that hypodermic injection is almost immediately followed by resolution into inert products of oxidation.

Of seventeen fatal cases of Addison's disease where the patients had been subjected to organotherapy, in two the suprarenals were completely absent. Both patients were markedly benefited. In two the suprarenals were shrunken and fibrous. One of these patients benefited greatly, the other derived distinct temporary benefit. In no one of the four patients was any tuberculous change noted. In another patient there was a tuberculous nodule in one kidney and in this case organotherapy afforded great relief. The patient succumbed to tuberculous meningitis. In five of the remaining number caseating foci and sclerotic nodules existed. Three of these patients derived no benefit from suprarenal therapy, the two others were temporarily relieved. In five patients the adrenals were enlarged and caseous with little or no fibroid change. Of these, three derived no benefit, two were temporarily benefited. Two patients, in whom both suprarenals were tuberculous, derived no benefit.

This analysis suggests to Adams that those cases "most likely to derive benefit from specific treatment are those in which the process is a chronic sclerosing one and where the other organs are fairly sound." He does not accept in its entirety Shoemaker's supposition that cases "in which organotherapy is useful are probably those . . . in which a portion of the gland or glands is functionally potent," since in some cases the glands have been found absent, in others reduced to fibrous tissue and yet material benefit has been conferred by the administration of suprarenal extract in one form or another. In those cases in which no benefit accrues from this form of treatment he urges that we should respect the burden under which the method labors when tried on moribund patients, or over too short a period. On the other hand, he would not lose sight of the large number of failures which are never reported. He refers, also, to the apparent recovery of patients long before suprarenal treatment was ever suggested, and to the natural tendency of the disease alternately to remit and exacerbate.

The case I wish to place on record is that of L. Y., white, aged fifty-five years, Hungarian,

musician, married. Family and personal history negative.

Present Illness.—The patient is unable to speak English, and no satisfactory account of his condition can be obtained from him. His wife, however, states that for five months he has complained of pains in the hands and feet, knees, ankles and shoulders, with swelling and loss of function in these parts, and that latterly he has lost greatly in strength and weight. She is not able to fix any definite date for the appearance of the cutaneous pigmentation. Upon admission to the hospital the patient presented, in addition to the more strictly objective symptoms to be outlined below, practically all the subjective manifestations of Addison's disease. Asthenia and emaciation were pronounced. When not constipated he was incontinent of feces. Incontinence of urine was also present. During the three first weeks of his stay in the hospital he suffered from diarrhea. The appetite was indifferent. Vomiting did not occur except toward the close when, within twelve hours, on three occasions, he vomited large quantities of brownish material. The blood examination revealed 2,690,000 erythrocytes and 4,800 leucocytes, 70 per cent. hemoglobin. The urine was of low specific gravity and contained a few hyaline casts but no albumin. The systolic blood pressure, measured by Cook's modification of the Riva-Rocci sphygmomanometer, registered 100 mm. of mercury in the left arm and 140 mm. in the right. It will be observed that at autopsy no change was observed that would account for this difference, which was likewise apparent to the palpating finger. No sputum could be obtained for examination.

The nervous symptoms were rather vague. The patient's mentality pointed to mild dementia—a condition not unknown in Addison's disease. Coarse volitional tremor in the arms was quite noticeable. Percussion beneath the clavicles revealed an excellent response to the pectorohumeral reflex recently described by Mills, of Philadelphia.

Physical Examination.—The patient is an elderly male, profoundly emaciated. For the greater part he is quiet, bordering on listlessness, but at times, particularly when disturbed, becomes noisy and demonstrative. The legs are strongly flexed on the thighs and the thighs on the abdomen, the forearms are flexed on the arms and the arms held close to the chest and toward the chin. Voluntary movements in these extremities are limited, forced movements painful. The patient tends always to assume the lateral posture.

Skin.—The skin of the entire body is of a deep brown color. Around the neck, at the waistband, around all the joints of both hands, at the wrists and around all the toes this pigmentation is exaggerated. The penis and scrotum are streaked by bands of blackish pigment deposit, the intervals being white, almost leucodermatous, so that the whole is not unlike the appearance of the leopard's skin. The palms display spots of deep brown pigment. The soles are only faintly discolored. The region of the sacrum and coccyx is involved in diffuse brown pigment deposits, while just above the left posterior superior spine is an area of brownish-black pigmentation the size of a silver dollar. The arms and legs are more deeply pigmented on the anterior than on the posterior surface. The scalp is faintly discolored. The skin in front and behind the shoulders, on the anterior abdominal wall, on the lower part of the back and on the anterior surface of the thighs is dry and finely scaly. On the lower part of the anterior abdominal wall and in the pubic region pigment is deposited in the form of small mole-like spots which are almost black in color. In both flanks, more particularly the left, leucoderma is present. The patch on the left side approaches the shape of an oblong and is three inches in length and an inch in width.

Mucous Membranes.—Conjunctivæ clear. The mucous membrane of the lips and of the buccal cavity exhibits both large and small areas of deep brown pigmentation. On the left border of the tongue and, in lesser degree, on the anterior and posterior surfaces is a large oblong patch of brownish-black discoloration. The mucous membrane of the glans penis is also streaked with black.

Lungs.—Both apices exhibit impaired resonance on percussion. Although the respiratory excursions are shallow auscultation reveals bronchovesicular respiration beneath both clavicles. At the right apex anteriorly a few fine crackling râles are audible.

Heart.—Apex beat neither visible nor palpable. On auscultation the heart sounds in the region of the normal apex beat are barely to be heard, while at the base no heart sounds are distinguishable.

Liver.—Liver dulness extends about two fingers' breadth below the costal slope.

Spleen.—Not palpable.

Pulse.—Right radial pulse more full than left. Pulses synchronous and 90 to the minute. Artery rather hard. Capillary pulse perceptible beneath nails.

Glands.—Superficial lymphatic glands universally enlarged.

Extremities.—Wrists, knees and ankles swollen, hot to the touch, painful on manipulation. No prètibial edema apparent.

Treatment.—On admission the patient was placed in bed and put under treatment for the joint symptoms. When the diagnosis of Addison's disease was made he was ordered ten minims of a 1-1,000 solution of adrenalin chloride three times a day. This was administered hypodermically. After thirteen days the dose was changed to 15 minims of a 1-5,000 solution. This was continued over a period of five days, when he was ordered extract of suprarenal gland in six-grain doses three times a day, or the equivalent of 18 grains daily. This amount was administered for thirty-five days and then increased to 27 grains daily. After seven days this was increased to 36 grains daily, continued at this rate for

twenty-seven days and increased to 45 grains daily and continued at this rate for eleven days. Then the solid extract was discontinued altogether and ten minims of a 1-1,000 solution of adrenalin cholride given hypodermically three times a day for a period of forty-five days, when the patient died with symptoms of pulmonary edema. Thus the patient was under specific treatment for a period of 143 days. At no time was any improvement noticeable.

Autopsy Report.—(Autopsy performed and notes kindly furnished by Dr. Horst Oertel, pathologist to the New York City Hospital). Body about 167 centimeters in height, of delicate frame, very poor musculature, great emaciation. The bones of the face are prominent, rigor mortis in upper extremities is not very marked, but there is very extreme stiffness of knee-joints, so that it is almost impossible to straighten them out. The skin of the entire body is smooth, thin and displays diffuse dark brown discoloration. In some portions there are patches varying in size which are darker than the remainder of the skin, especially in the region of the scrotum and on the abdomen. The same discoloration in patches is found in the mucous membranes, especially that of the tongue, where it is almost black. Upon section there is practically no subcutaneous fat, muscle tissue brownish pale, very dry and atrophic. The abdominal cavity contains no fluid, the serosa of the intestines is pale and shiny, the diaphragm is at the fifth interspace on the left, and the fourth on the right side. The pericardial sac is thin and contains a small amount of blood-tinged fluid. The heart is small, the right side moderately distended and the left side moderately contracted. On opening the right side there is a little fluid blood in the ventricle, and the auriculoventricular opening readily admits three fingers. The left side is empty, and the auriculoventricular opening admits two fingers. The pulmonary valve is delicate and the curtains are fenestrated. The aortic valves exhibit a good deal of thickening at the base, and very pronounced atheromatous degeneration of the aorta exists with the formation of large calcareous patches. The mitral valve is moderately thickened and contracted, the corda tendinæ slightly thickened and shortened. The papillary muscles are pale, thick and short. The coronary vessels are slightly atheromatous, small and very tortuous. The heart muscle is atrophic, firm and brownish pale. The pleural cavity on the left side is empty and shows old and extensive but not very firm adhesions. The left lung shows adhesions between the lobes and is emphysematous. At the apex is an old scar, at the base a few old tubercles. The right lung shows a few adhesions at the apex and a few old tubercles. The lung is emphysematous and edematous. The spleen is bound down by firm adhesions, is slightly enlarged, the surface is steel blue in color, the organ is firm and there is considerable perisplenitis. On section the color is brownish-pale, the trabeculæ are distinct and the Malpighian corpuscles prominent.

Left Suprarenal.—The left suprarenal gland is bound down by firm adhesions to the left side of the spinal column and is irregular and nodular. On removal it cuts with moderate difficulty, and is seen to be transformed into a large cheesy mass, so that very little tissue is to be made out. As a whole the gland is enlarged.

Right Suprarenal.—As a whole the right suprarenal is enlarged and is bound down in the same way as its fellow. On removal it seems to be harder than the left, smaller in size and not so nodular. On section it appears harder and shows distinct cheesy nodules, but more preserved apparently normal tissue. The cortical portion is distinctly pigmented.

Left Kidney.—There is practically no perinephric fat, the size of the kidney is not markedly changed, the consistency is firm, the capsule strips easily, the surface is slightly lobulated, the color is mottled and shows distinct yellow patches. On section the cortex appears thin and irregular, the markings are very distinct, especially at the junction of cortex and medulla, the medullary rays prominent, the medullary portion pale, the vessels firm and thick.

Right Kidney.—The right kidney is slightly smaller than the left. Its consistency is hard. There is a solitary tubercle in the cortex. Otherwise it resembles the left.

The stomach is small, the walls thickened. The organ contains a little greenish, bile-stained fluid. The mucous membrane near the cardiac end is atrophic and shows loss of the rugae, but near the pylorus it is distinctly thickened and the rugae are marked. The whole surface of the mucous membrane is covered by a thick, white, slimy material, beneath which a number of ecchymotic spots appear. The walls of the intestines are very thin and the mucous membrane is atrophic. The mesenteric glands are not involved. The bronchial glands are large and deep black in color, but show no tuberculous involvement. The liver is moderatey enlarged and shows a moderate degree of perihepatitis in patches, the color is mottled, surface smooth and the consistency diminished. On section the central veins appear prominently as deep red spots, the lobules around them are pale and swollen and their outlines indistinct. The pancreas is small, pale and very hard. On section it is seen to be distinctly cirrhotic.

The Brain.—Dura thickened. Calcareous deposits in the falx. The pia is thickened, especially along the frontal lobes. The arteries at the base show patches of advanced endarteritis. The lateral and third ventricles contain a considerable amount of clear colorless fluid. The left corpus striatum contains a few small areas of cystic softening.

Anatomical Diagnosis.—Chronic endocarditis of aortic and mitral valves, advanced atheroma of aorta, brown atrophy of the heart; emphysema and edema of lungs, with few old small tubercles; chronic atrophic splenitis; chronic pleurisy; tuberculosis of suprarenal glands; chronic diffuse nephritis; chronic venous congestion of liver with

marked fatty infiltration; chronic gastritis; chronic enteritis; cystic softening in left corpus striatum, endarteritis obliterans; chronic interstitial pancreatitis; general brown atrophy of skin.

In conclusion, I wish to thank Dr. T. C. Janeway, in whose service at the New York Hospital this patient was observed, for his permission to place the case on record.

THE GASTRO-INTESTINAL CRISIS OF ERYTHEMA EXUDATIVUM; SIMILATING APPENDICITIS.

BY A. M. POND, M.D.,
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OSLER defines exudative erythema as a "disease of unknown etiology, with polymorphic skin lesions—hyperemia, edema and hemorrhage—arthritis occasionally, and a variable number of visceral manifestations, of which the most important are the gastro-intestinal crises, endocarditis, pericarditis, acute nephritis and hemorrhage from the mucous membranes."

It is with especial reference to the gastro-intestinal crisis above mentioned that the present paper will have to deal, for its interest to surgeons, because of the marked similarity in some instances to appendicitis.

The condition may present no evidence of any skin lesions; again, it may precede the gastro-intestinal symptoms, and yet again may not appear for several days after the abdominal discomfort. Quite obviously when the skin eruption precedes the attacks of colic with rises of temperature and pulse, the temptation will not be great to operate for a supposed disturbance of the abdominal contents; but where the eruption does not occur at all, or in cases where its appearance is delayed for several days following the attacks of abdominal pain, and where the temperature and pulse are high and the vomiting continuous, the condition is perplexing.

These gastro-intestinal crises seem to be a very important and quite a constant symptom. In a series of 29 cases reported by Osler the gastro-intestinal symptoms were noted in 25 cases, or 86.2 per cent., and in one instance (*Case XX*) a diagnosis of appendicitis was made and the patient admitted to the surgical service of the hospital, even after the rash had appeared.

Below I report a case in which the eruption did not appear until several days after the intestinal symptoms had become grave:

Ethel B., aged nine years, poorly nourished, anemic. Father, farmer; gives history of severe attack of rheumatism, no heart lesion, and at present no joint symptom; no evidence of kidney disease. Mother died of hemorrhagic pancreatitis in May, 1903; had four children; one died at four months, imperfect closure of the foramen ovule; a brother of mother died of intestinal perforation during typhoid in July, 1902; mother's father died of pneumonia in March, 1902; mother's mother has had rheumatism for many years, no heart lesion, nor evidence of nephritis. Has attacks of skin eruption, erythematous in nature, more frequent during winter months.

January 15, 1904. Complained of headache upon retiring; was given 15 c.c. of castor oil.

January 16. Bowels moved three or four times; began vomiting about noon; complained of severe pain about umbilical region at 2 P.M. Temperature 103° F. 5 P.M., temperature, 103.5° F.; 8 P.M., temperature, 102° F.; father had used hot applications, which seemed to increase the symptoms.

January 17, at 4 P.M. saw the case. Temperature, 104° F.; pulse, 120; moaning and groaning; listless, anxious facial expression; vomited six times since noon. Pain was located a little below and to the right of umbilicus; pressure increased pain materially, and a distinct spasm of the wall of abdominal rectus could be felt; no pain in left groin, pressure tolerated. Ice-bag was ordered over right groin, and pancreatin and soda bicarb. each .0324 gm. ordered p. r. n. for nausea and vomiting. All food by mouth discontinued; liq. peptone by rectum, three hours.

January 18, 9 A.M. Temperature, 98.6° F.; pulse, 110; slept poorly, but complains of no pain, playing with doll; tongue very red and furrowed, gums spongy and bleeding easily. Blood count, hemoglobin 80 per cent.; red cells, 4,136,000; white cells, 10,680. Advised removal to Mercy Hospital, Webster City.

The following record is taken from the history sheet of hospital:

January 19, 12 M., admitted. Temperature, 101° F.; pulse, 100. Pain severe. Ice applied over right groin. 1 P.M., fed per rectum. 2 P.M., sleeping; 4 P.M., moaning in sleep; fed per rectum. 8 P.M., temperature, 101° F.; pulse, 100; respiration, 20. 11 P.M., moans and cries in sleep; restless.

January 20, 3 A.M. Temperature, 100.6° F.; pulse, 100. 8 A.M., temperature, 100° F.; pulse, 89. 11.30 A.M., temperature, 99.6° F.; pulse, 88. 1.30 P.M., temperature, 99.6° F.; pulse, 88; patient very comfortable. 8 P.M., temperature, 100° F.; pulse, 86; respiration, 24; urine, 178 cc.; pain very severe. 10 P.M., temperature, 99.8° F.; pulse, 90; respiration, 16; moaning and crying.

January 21, 2.30 A.M. Temperature, 99.2° F.; pulse, 104; respiration, 16; pain very severe. 3 A.M., expelled gas freely. 5 A.M., temperature, 99° F.; pulse, 96; respiration, 16. 8 A.M., red blotches on face and hands; temperature, 99.5° F.; pulse, 88. Skin eruption was first evident on the right side of face, and consisted of large bright red wheals; the color did not disappear on pressure. 12 M., temperature, 99.4° F.; pulse, 88; pain very severe. 3 P.M., sleeping, but very nervous. 5.25 P.M., rash over entire face, extending down to the neck, chest and arms; several small punctate eruptions capped with a vesical, some containing clear fluid, others substance looking very much like pus; pain very severe; urinated 475 cc. Examination of urine: Color, dark straw; turbid; acid reaction; specific gravity, 1,018; chlorides, 12 per cent.; phosphates, 8.5;

sulphates, 3.5; albumin, 2.5; urea, 1.5. Number of slides examined, 2; fine granular and bloody casts; blood cells; amorphous urates; calcium oxalate crystals. 8 P.M., pain very severe; expelled some gas. Spr. aetheris nit., .92 cc. ordered.

January 22, 3 A.M. Temperature, 98.6° F.; pulse, 90; respiration, 20. 10 A.M., temperature, 99.2° F.; pulse, 88; eruption symmetrically arranged in large wheals over surface of both thighs, an occasional punctate eruption capped with white vesicles, no edema of ankles, no joint pains. Heart apex about fifth interspace, about 7 cm. midsternum, no murmurs; eyes puffy; hydrg. chlor. mitis. 0.0130 gm. ordered every half hour for five doses. 3 P.M., urinated 10 ounces, no pain; examination essentially same as before. 10 P.M., large, free bowel movement, clay color, nor formed, containing blood and mucus; no pain.

January 23, 10 A.M. Child appears listless, indifferent, rash disappearing; pustules forming in right hand; abdomen not tender; tongue red but smooth; gums normal; no puffiness of eyes; urine, 150 c.c.; cloudy, with distinct reddish cast; temperature, 98.6° F.; pulse, 70; soft diet ordered, with soln. pept. ferri et mangan, 4 cm. t.i.d., after meals.

January 26, 2 P.M. Temperature, 98.6° F.; pulse, 76; discharged from hospital.

When this case first came under observation, with temperature of 104° F., pulse of 120, recurrent vomiting, and spasm of rectus abdominal muscle, I at once thought of appendicitis, and this was further confirmed by the blood examination, which showed a slight leucocytosis of 10,680, and had the acute symptoms not subsided by the withdrawal of food by mouth and the application of ice to the right groin, I most certainly should have operated the case at once. But since the child had been sick for forty-eight hours before I had seen her, I thought it wise to pursue means to abate the condition, and after a return to normal temperature and pulse and a cessation of pain, to do a late operation.

After the appearance of the eruption, which, as the record shows, occurred coincidentally with the subsidence of pain and lowered temperature and pulse, etc., the condition was most perplexing. Then with the suppression of urine and the consequential findings in the urine that was passed, of blood, casts and albumin, served to clear the condition somewhat.

It is interesting to note the family history in connection with this case, there being a history of rheumatism, with its allied complications, in three generations. Osler reports one case in which he was able to follow these conditions in five generations.

After the child began to recover, and after a return to normal temperature, pulse rate and cessation of pain, I again examined the abdomen. I could not quite bring myself to believe that there was not some serious pathological condition in the abdomen that was responsible for the grave symptoms that had occurred; the child was thin, and the abdominal walls lax, so that examination was very easy, and the findings reasonably certain.

With the child lying on her back, and the left hand lifting the right loin and making deep digital pressure over the right lower quadrant, no mass could be detected, no point of tenderness encountered, and no swollen or sensitive appendix perceptible, although I am quite sure I could feel it slipping beneath the fingers of my right hand while making a rubbing motion toward the ilium at deep pressure.

Osler accounts for these gastro-intestinal crises as being "probably due to localized edema of the gastro-intestinal walls," and classed these cases with those of angioneurotic edema in which colic occurs as so prominent and constant a feature.

In casting about over the voluminous literature that has recently appeared concerning appendicitis in all of its phases, it is surprising that so little mention is made of these symptoms which are so similar. No one has evidently described the pathology, if he has been unfortunate enough to operate these cases, or else there is a striking similarity of pathology in the cases that appear without any skin manifestations, and are beyond peradventure appendicitis, and those cases in which preceding the operation, or shortly after it, the erythematous condition is manifest.

Many queries concerning this case suggest themselves:

1. Was the skin manifestation in this case similar to the well-known skin complication occasionally found in cholelithiasis?

2. Could it be due to metabolic disturbance similar to the conditions met with in individuals who are susceptible to certain articles of diet, such as shellfish, certain fruits, etc.?

3. Could it be a manifestation of the bacteria concerned in appendix inflammation, especially the *Bacilli coli communis?*

4. Was the abdominal symptom concommitant with the skin lesion as a prominent and constant feature or vice versa?

In discussing the first query, it will be remembered that the erythema co-incident with cholelithiasis is accompanied with intolerable itching and more or less marked gastro-intestinal disturbance, and is commonly of the discrete wheal formation, non-elevated, and disappearing upon pressure. There may or may not be jaundice; if the biliary passages are obstructed, either by mucous membrane inflammation sufficient to occlude the lumen of the duct, or by the presence of a gall-stone of such size as to be unable to pass the duct, jaundice may be present, and, after its subsidence, cause the itching, which, in turn, may be followed by the wheals. The erythema due to some idiosyncrasy regarding the eating of fruit, obviously occurs during the season when such fruit is in abundance, and becomes a portion of the diet. A history of such idiosyncrasy can as a rule be readily obtained, and the condition can be cleared up. The eruption occurs in a fine erythematous rash arranged in patches, and is accompanied by itching.

3. It is hardly reasonable to suppose that such a polymorphous erythema would be produced by bacterial invasion without more clinical manifestations than were noted in the above case. The common bacteria emit a specific toxin peculiar to them, and this toxin has in turn a specific action on the physical economy. Were there but one, or even two distinct types of skin eruption, this might be accounted for by the bacterial cause of some infection, but where the lesions were so varied and numerous it can hardly be considered pertinent.

4. In reviewing the records of this case, and noting the comments made upon this condition by other observers, I am persuaded that the abdominal crisis is a frequent and prominent feature of these cases, of which so little of the pathology is now known. The fact that in some of these cases the gastro-intestinal crises are absent, but present all the polymorphic skin lesions, would argue rather against the assumption that the skin lesion was in any way due to pathology of the abdominal contents, or from any disturbance of the process of metabolism consequential to the pathological process.

From the foregoing it will be readily observed that increased caution will be called for in arriving at a diagnosis in the cases presenting the acute characteristic paroxysms of colic, attended by vomiting, rapid pulse, a tender abdomen, perhaps presenting a tumor, with either a spasm of the abdominal recti muscles, or, in the later stages, a condition of abdominal rigidity.

Typical as these symptoms may appear, to indicate an involvement of the appendix or other abdominal viscera, operative measures should not, I think, be too hurriedly undertaken, without first a careful study of the family history, with the view of discovering skin, joint or kidney lesions in other members of the family, supplementing this with a blood examination and determining the relationship between the red and the white cells, and lastly a thorough examination of the urine, together with an exposure of the surface of the body in search of polymorphic skin lesions.

There are other conditions that may be found that will serve somewhat to clear up matters, such as spongy condition of the gums, which bleed easily on touch perhaps, joint symptoms, areas of angioneurotic edema, with hyperesthesia. In the presence of any of these conditions an early operation is not to be recommended, unless the blood count shows, beyond peradventure, a rapidly increasing leucocytosis; and examinations should be made hourly and the increase be distinct before operation is undertaken.

Bacteriology of Chromidrosis.—R. TROMMSDORF (*Münch. med. Woch.*, July 19, 1904) was able to grow two specific bacteria from a case of chromidrous, the one producing yellow and the other red pigment. The cause of blue perspiration is not yet settled, since some observers have discovered indigo, others ferrous phosphate in the secretion. It is likely, however, that bacteria also play a prominent part here.

MEDICAL PROGRESS.

SURGERY.

Ulcer of the Stomach Due to Lesions in the Gastric Nerves.—It has been claimed that injury to the external nerves of the stomach in animals has been followed by ulceration of the mucous membrane. VEDOVA stated that by causing an injury to the celiac ganglion or its thoracic roots in dogs he was able to produce ulceration of the wall of the stomach which resembled closely the lesion found in the human subject. Van Jizeren also claimed that cutting the vagus below the diaphragm in rabbits was followed by the formation of a chronic peptic ulcer of the stomach. M. DONATI (*Deut. Archiv f. klin. Chir.*, Vol. 73, No. 4) criticizes these views and submits the results of his own experiments in dogs and rabbits, where he resected the vagus below the diaphragm, extirpated the celiac plexus, or did both operations. These attempts were all attended by negative results, and in no instance was there any development or a gastric ulcer or similar lesion. In many animals there was noted an increase in the secretion of hydrochloric acid. The animals were kept under observation for six months. Donati concludes that a trophic origin for the round ulcer of the stomach cannot be conceived, and that this lesion is not due to any changes in the external nerve supply of that organ. He believes, however, that there is a possibility that the nervous system has a certain influence which may act as a predisposing factor, but the processes already outlined are not the only cause which produces an ulcer of the stomach.

Micro-Organisms in the Small Intestine.—It has already been shown that the mucous membrane of the trachea, the conjunctive and the urethra is free from germs under normal conditions, which may be accounted for by the supposition that the mucous membrane has bactericidal properties which destroy the penetrating organisms. I. JUNDEL (*Archiv f. klin. Chir.*, Vol. 73, No. 4) has now also examined the empty small intestine with reference to its bacterial contents, the material for investigation being taken from the gut during the operation for gastro-enterostomy (five cases). In one patient who had a carcinoma of the stomach, the cultures showed numerous bacteria; in two others they were practically sterile. In two cases of benign stenosis of the pylorus, only a few isolated colonies developed, and the contents could be considered sterile. It is evident, therefore, that the small intestine has the power to destroy, soon after it has been emptied, the germs which may be left behind and to bring about a condition which may be designated as an autosterilization. The author asks that further observation be made to verify his statements and conclusions.

The Question of Auto-Intoxication in Ileus.—In order to aid in solving the important question as to whether death in ileus is due to intestinal intoxication or to reflex action, P. CLAIRMONT and E. RANZI (*Archiv f. klin. Chir.*, Vol. 73, No. 3) have carried on a large number of experiments on the toxicity of the intestinal contents. The material to be investigated was secured in large part from dogs, cats and rabbits. The ileus was produced by a circular ligature of the small intestine with a sterile cotton wick, such as is employed for temporary occlusion when doing intestinal anastomosis. Eighty-five animals were thus treated, but in only 81 per cent. were symptoms of ileus elicited. The intestinal contents from the animals and also from a few cases of intestinal obstruction in man, were filtered and injected into other experimental animals. The majority of the animals died, with typical symptoms—diminished respiration, dilated pupils, increased reflex irritability, tonic and clonic convulsions. The symptoms were independ-

ent of the species of animal or the manner of application of the experiments, but seemed to depend on the relation between the amount of the material administered and the weight of the animal. Filtrates of bouillon cultures grown under aerobic conditions all had an equal effect, whereas the filtrates of pure cultures and anaerobic cultures had no effect whatever. The toxic properties of the filtrates were not visibly affected by heating, and keeping them for a time caused them to lose their power spontaneously. A number of these filtrates manifested an hemolytic and cytolytic action (on epithelium) which varied in intensity. The addition of normal brain tissue inhibited the toxic properties of the filtrates, and it seems therefore that these substances form a close union with the central nervous system. Immunization experiments conducted in animals were not attended with any definite results. The authors conclude that in the intestinal contents of cases of intestinal obstruction, whether experimentally produced or otherwise, toxic substances of a bacterial nature are formed, which are absorbed by the system and produce a toxemia. They do not believe that the infection is exclusively with the *Bacillus coli*, as claimed by others. There are probably a number of poisons derived from various micro-organisms of the intestine, which affect the different organs, such as the brain, the heart, the kidneys.

Foreign Body Imbedded in the Heart.—A most unusual case is reported by M. KOCH (*Berl. klin. Woch.*, July 11, 1904), where at the autopsy examination in a man of seventy-six years, who died from inanition due to senility, an elongated steel was found imbedded in the wall of the left ventricle. The patient's history failed to give any clue as to the time of entrance, nor did it apparently cause any symptoms. The object proved to be a needle-like bit of steel about 3 cm. long. It was probably introduced suddenly from without at some remote period of the patient's life, and, strangely enough, never caused any discomfort, and was therefore not noticed.

Pathology of Bullet Wounds of the Stomach.—A case is reported by O. v. FRISCH (*Arch. f. klin. Chir.*, Vol. 73, No. 3), where a laparotomy was done after the patient had been shot in the abdomen. The bullet entered the stomach and the wound was readily found and sutured. The point of exit could not be located, although the X-ray examination had demonstrated that the projectile had traversed the stomach. The patient made a good recovery. The author then made a number of experiments on the stomachs of animals and found that the wound of exit in the serous coat of the stomach was usually a small slit which might easily be overlooked, in those cases where the force of the projectile had been mostly spent. The entrance wound is ordinarily the more extensive and affords the stomach contents an opportunity to find their way into the abdominal cavity. It seems feasible, therefore, not to prolong the search for any wound of exit unless signs of hemorrhage are present, when the wound of entrance is of no greater diameter than 7 to 8 mm., although gastric contents may have been evacuated into the general peritoneal cavity. The abdominal incision may then be closed without danger.

MEDICINE.

Hemalysis Caused by Cancer Extract.—In order to explain the marked deterioration of the blood seen in patients suffering from malignant tumors, D. KULLMANN (*Zeitsch. f. klin. Med.*, Vol. 53) prepared an extract of carcinoma cells and mixed it with freshly-drawn red cells. In every case the cells were rapidly disclosed. Further researches showed that the hemolytic substance is firmly combined in the cells themselves for an unfiltered extract has a stronger action than a filtered one. It is not specific for homologous blood, but dissolves the blood-cells of many species. Furthermore, it is resistant against boiling, is soluble in alcohol and water and not identical with the autolytic ferment of carcinoma or normal organs. After injecting the maceration intraperitoneally another hemolytic substance forms in the animal body, which seems to have a much more complex composition.

Peculiar Course of Cancer of Stomach.—The patient of G. HONIGMANN (*Zeitsch. f. klin. Med.*, Vol. 53) had suffered for years from nervous hyperacidity and had improved considerably under treatment. After an attack of indigestion he developed a severe gastric and intestinal catarrh, which also yielded, except that a moderate degree of atony and supersecretion remained behind. The course was satisfactory and the patient even gained weight, until the entire aspect of the case changed without apparent cause. After a slight gastric hemorrhage, the muscular activity of the stomach ceased completely, the hyperacidity was suddenly replaced by anacidity and attacks of tetany made their appearance. The patient's condition became so serious that an operation was performed, disclosing a pyloric cancer with many miliary metastases in the mesentery. After a gastro-enterostomy the attacks disappeared and the patient enjoyed comparative comfort for eight to ten weeks; but after that the course was steadily downward. The sudden change of the patient's condition after the hemorrhage, the author thinks, was due to perforation of a blood vessel by the growth, thus converting the local disease into a general one. The cause of anacidity in carcinoma is not yet understood and some believe that the alkaline secretion from the ulcerated growth neutralizes the acid. It is, however, more likely that the general intoxication is responsible since the same anacidity is noticed with cancer elsewhere. There is likewise a discrepancy of opinions concerning the cause of tetany, some ascribing it to inspissation of the blood, others to reflex influences or to auto-intoxication, but in this case it was probably due to an inundation of the system with cancer toxins, especially since it has already been proven that the latter may have a specific action upon the nervous system.

Influence of Exercise, etc., on Nephritis.—If patients suffering from chronic interstitial nephritis are placed into a warm or carbonated bath, both blood-pressure and amount of albumin will sink. After the bath, the albumin will often rise, with horizontal posture and fall with exercise. Rest in bed has the same influence as baths, but to a less marked degree, and arteriodilatars, such as amyl nitrite and nitroglycerin, also reduce the albumin, together with the pressure. The beneficial influence of exercise, especially of climbing mountains, without fatigue, is especially emphasized by C. EDEL (*Zeitsch f. klin. Med.*, Vol. 53). The albumin reaches a very low percentage, even though the pressure rises, since increased heart-action accompanies the general dilatation of the vessels. This form of exercise is therefore highly recommended in Bright's disease especially, since it also stimulates the respiration and diminishes the amount of urine.

Diagnosis and Treatment of Azoospermia.—A number of methods have been proposed for determining the presence of living spermatozoa in cases where more or less obliteration of the seminal passages has taken place as the result of a gonorrhea. C. POSNER and J COHN (*Deutsch. med. Woch.*, July 14, 1904) comment on the failure of most of these suggestions when practically applied. Fürbringer has proposed to lay open the tes-

ticle and then to examine the contents. As this is rather an extreme procedure, the writers suggest attaining the same ends by puncture of the testis by means of a hypodermic syringe. There is no pain, an anesthetic is unnecessary and the patients are not confined to bed. When the material obtained is found to be made up of fatty cells and detritus, and spermatozoa are absent, it is of no use to attempt anything more. Where the latter are present, it still remains a question as to what to do. In six cases reported by the authors, the cut end of the vas deferens was implanted directly into the opened canals of the head of the epididymis, or an anastomosis was made by carefully approximating and suturing the edges of openings made in the walls of the vas and the epididymis. In none of these cases, however, were any positive results obtained thus far. The most important thing in this condition is to institute early prophylactic measures, by watching for the development of an epididymitis after the acute gonorrhea has subsided. If present, massage, the application of iodine and other remedies should at once be instituted. It is also essential that frequent examinations of the spermatic fluid should also be made in order to determine its character.

An Instance of Transitory Diabetes.—An interesting case history is presented by E. MANN (*Berl. klin. Woch.*, July 25, 1904). The patient, a man of forty-five years, had been afflicted with a diabetes insipidus, which within a few weeks became converted into a diabetes mellitus, with considerable excretion of sugar. This also disappeared completely within sixteen days under a diet of oatmeal, as recommended by Van Orden. The patient died, however, shortly afterward from a carcinoma of the stomach, in which the pancreas was involved.

Dermatitis Coccidioides.—This disease has been considered identical with blastomycosis. D. W. MONTGOMERY and H. MORROW (*Jour. Cut. Dis.*, August, 1904) have called attention to points of difference between the two. The organism causing coccidioides has a double cycle of growth, one seen in the tissues, the other on culture media, the two having no features in common. Such cycles have not been noted in blastomyces. On agar culture media the aerial hyphæ of the *Coccidioides* organisms are no high and furry; in cultures of *Blastomyces* they frequently are. The growth of the *Coccidioides* organism on agar is sharply circumscribed; that of the *Blastomyces* is not. The micro-organism of *Coccidioides* grows faster and liquefies gelatine more readily than that of the *Blastomyces*. The fungi of each seem to be fatal to the same kind of animals, but inoculation of guinea-pigs with the *Coccidioides* organism tends to cause caseous degeneration of the testicles, a fact never observed in the case of the *Blastomyces*. The fungus of *Blastomyces* multiplies by budding; that of *Coccidioides* does not, the sole mode of reproduction of the latter being by means of an endogenous spore formation. Additional characteristic points of *Coccidioides* as against *Blastomyces* are that the capsulated bodies in the tissues are comparatively large and usually circular; the infection tends to become generalized; the prognosis is bad; the administration of iodide of potassium has no control over the disease.

Eczematoid Eruption of the Lip.—A peculiar eruption about the region of the lips is described by H. W. STELWAGON (*Jour. Cut. Dis.*, August, 1904) as usually beginning on the vermilion border of the lips, showing at first a superficial eczematous condition, with scanty expoliation, no liquid exudate has been seen, burning and heat may be complained of, but seldom any troublesome itching. This condition tends to retrogress sooner or later to present again. After some weeks or months the disease extends to the skin, frequently at the same time spreading inward over the mucous membrane. The upper lip is always much less affected than the lower; in some instances the tongue has become likewise affected. Contiguous to the affected area on the lip or slightly beyond, one or more small reddish, flattened or rounded persistent lesions appear, which later exhibit scaling, sometimes crusting, but no exudation. The disease is of a benign character, never showing any destructive action. Anti-syphilitic treatment tends to aggravate rather than improve the condition. The most satisfactory treatment of the cutaneous lesion is sulphur 20-60 gr. to the ounce of Lassar's paste, or painting with 10-50 per cent. alcoholic solution of resorcin.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Peritonitis after Phlegmon of Arm.—That peritonitis may develop through a retrograde transport of germs from the arm by way of the lymphatic system is clear from the two cases published by M. LOHLEIN (*Virchow's Archiv*, Vol. 177, No. 2). Streptococci had gained access to the subcutaneous cellular tissue of the left arm, and had then traveled to the gland of the axilla. From here the upper end of the thoracic duct was invaded and the opening into the subclavian vein obstructed by a thrombus, so that the germs found a ready opportunity to travel backward into the peritoneum. Both patients had developed indefinite pains in the abdomen a short time after their injury, and soon the typical picture of peritonitis appeared. Septic infection of the thoracic duct is more common with infection of the uterus, but here the germs travel with the lymph-stream, not against it.

Recent Investigations in Hay Fever.—A discussion of recent experimental work on hay fever is made by R. A. GLEGG (*Jour. of Hyg.*, July 9, 1904). The researches were conducted by Prof. Dunbar, which show that there is in reality but one exciting cause for hay fever, this being the pollen of grasses and of certain other plants. He found that these pollens could artificially excite attacks of hay fever when applied to the conjunctivæ or nasal mucous membranes of persons predisposed to the disease, and this even outside of the hay-fever period. Dunbar succeeded in isolating the peculiar poison in the toxic pollen, and found it to be an albuminous substance, so toxic that even .000025 milligrams of the proteid body, consisting of this active albumin and also of inert globulin, could excite irritation in the conjunctiva of a predisposed patient. This amount of toxin would be contained in two or three pollen grains. Large doses produced very severe attacks, and toxin injected subcutaneously produced most unpleasant, and indeed dangerous, symptoms in two hay-fever patients. This toxin is absolutely without any effect on normal persons. By injecting pollen toxin into animals Dunbar succeeded in obtaining an antitoxin, which neutralized the toxin in vitro and cut short attacks of hay fever artificially produced by the toxin. Furthermore, the antitoxin cut short attacks of the natural disease. Owing to the peculiar nature of the disease and the constant reinfection of the mucous membranes by pollen on exposure to the outside air, Dunbar has found it to be necessary to use the serum prophylactically, to sleep with the windows closed, apply serum in the morning before rising, both to eyes and nose, and again during the day on the appearnce of the slightest irritation in the conjunctiva or nasal mucous membrane. By this means he has succeeded, and others have also been successful, in acquiring freedom from attacks.

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EDDYISM AND MAGNETIC HEALING.

THE recent exposé of Eddyism, showing that it had its origin not even in a supposedly divine revelation, but developed in a very matter of fact manner from a system of magnetic healing invented by one Dr. Quimby, of Maine, should receive more than passing attention from physicians. We are indebted to the enterprise of the New York *Times* for putting into popular language with further evidence the extensive study of Woodbridge Riley in the "Personal Sources of Christian Science," *Psychological Review*, November, 1903.

According to this well-authenticated story, it is easy to trace the gradual evolution of an ordinary magnetomental system of therapeutics into modern Christian Science, with its presumptuous claim to definite divine revelation. The investigation also throws no little light on the career of Mrs. Eddy herself. According to her disciples, in 1866 she fell on an icy sidewalk and hurt herself. The official Eddy version is that this led to the discovery of Christian Science. Her Bible opened to the account of the healing of the palsied man. She immediately saw the truth, and recovered without the aid of medicine. The physician who attended her, Dr. A. M. Cushing, now of Springfield, Mass., gives a different version. He says he found her nervous, semi-hysterical, and considered it necessary to give her quieting medicine rather frequently. At subsequent visits she complained so much of discomfort that he found it necessary to give her morphine. During her visits to him she occasionally spoke of Dr. Quimby, of Portland, Maine, and stated that he had wonderful success in treating her.

Documents are furnished in the late exposure which show that many of Mrs. Eddy's expressions with regard to science and health are copied directly from the pamphlet of Dr. Quimby. Some of this author's manuscripts are shown in facsimile with corrections and interlineations in Mrs. Eddy's own handwriting, which serve to bring out very clearly certain steps in the evolution of Quimby's magnetic healing into Eddyistic Christian Science. At first, indeed, Mrs. Eddy, according to competent witnesses still alive, gave due credit to Dr. Quimby. Only later, when success began to come to her, when she realized the possibilities of such a declaration, did she insist that her new doctrines were a direct personal revelation to her from on high.

This claim becomes doubly absurd in the light of the disclosures. Its refutation is written by Mrs. Eddy herself. Such familiar Eddyistic expressions as "The patient's disease is in his belief," "Error is sickness, truth is health," are directly traceable to Dr. Quimby's writings. With very slight modifications they are to be found even in recent editions of Mrs. Eddy's book. Occasionally there are modifications such as "Error is matter" (Quimby), "Matter is mortal error" (Eddy), "Matter has no intelligence" (Quimby), "The fundamental error of mortal man is the belief that matter is intelligent" (Eddy). As Riley puts it, however, "it is needless to go into the muddy question of plagiarism. There is no real issue between the Eddyite and the Quimbyite, because the head of each school drew their philosophic trickle from a common source. One of the chief ex-Christian Scientists himself grants that there was a near approach to the theory and practice of Dr. Quimby in the contemporary investigation of John Bovee Dods, who believed that electricity was the connecting link between mind and matter, that disease originated in the electricity of the nerves and can be cured by a change of mind." "It was from the vaporings of itinerant magnetizers that Mrs. Eddy sucked in her primary notions." "The quacks were drawing full houses in New England at

the very time she was on her pilgrimage for health." Hence the true history of "Mental Science" is to be traced, not to the original Quimby, but to the indiscriminate practice of mesmerism along in the forties and fifties, and to the crude attempts of Yankee philosophers to explain the borderland phenomena of hypnoidal states.

ATHLETICS AND ARTERIOSCLEROSIS.

We are just entering upon the period of the year when, with the opening of the universities, a very large number of young men in this country settle down to the hardest kind of athletic training for the various sports. It seems not inopportune then to review for a moment certain recent expressions of medical opinion with regard to the immediate and remote effects of the severer forms of athletics upon the general health, exercise, and especially those sequelæ that may influence length of life. Not a few of those who took part in the very interesting discussion on arteriosclerosis at the last meeting of the American Medical Association insisted on the fact that the violent forms of athletic exercises most in vogue at universities at the present time are likely to be sources of early arterial degeneration with consequent early loss of vigor and curtailment of life.

As far back almost as medical history runs, it has been conceded that the most harmful factor in breaking down health and in shortening life was severe labor during the period of adolesence and bodily development. This would include especially the years between fifteen and twenty-three, when, after puberty, the body is gradually reaching its acme of development. It is considered almost a truism to say that strenuous physical labor at this time, if carried on to the fullest limit of capacity, is sure to lower resistive vitality and hinder proper development. There are not many who would hesitate to say that to compel growing boys between fifteen and twenty to strain themselves lifting heavy weights, which they are just able to carry, or to work so hard that they sometimes faint because their hearts refuse to send a sufficient amount of blood to the brain, is actually criminal. In what the compulsion to labor so hard differs from athletic exercises which call for just as much exertion and produce as serious effects upon the individual is hard to understand. It is this point particularly that a number of good clinical authorities at Atlantic City insisted on, and suggested that the faculties of our universities should be made to realize.

"A man is as old as his arteries" is a popular truism that remains quite as true for the physician as for the general public. The etiology of premature degeneration of arteries is well-summed up in the expression of the distinguished American clinician who says that it occurs especially in the devotees of the three pagan deities, Vulcan, Venus and Bacchus, that is, it occurs in those who work too hard, in those who suffer from venereal disease rather than from excesses in venery, and in those who indulge too much in spirituous liquors. The relative etiological importance of the causative agents at work is expressed by the order in which they are mentioned above.

There is no single factor in the production of precocious senility due to degeneration of arteries so effective as hard physical labor. The series of statistics presented at the recent meeting of the American Medical Association with regard to the development of arteriosclerosis under forty-five years of age brought out this fact very forcibly. It is no wonder then that there should be agreement among physicians as to the utter inadvisability and almost inevitable harmfulness of the severe physical strain of certain phases of modern athletics.

There is another important element also likely to be harmful in its tendency to which attention was not directly called, although certain of those who took part in the discussion did insist on the necessity for careful dieting and especially on the avoidance of excesses in animal foods, if arteries are to be kept in their normal elastic condition. There is no doubt that an excessive nitrogenous diet adds its quota of irritation to nerves and arteries and leads to unfortunate consequences. The strain put upon the kidneys by such a form of diet is much more severe than with the ordinary mixed diet containing a larger proportion of carbohydrates, which is so much more suitable for the adolescent period. There are forms of heart and kidney disease that consequently develop in association with arterial degeneration, and it has never as yet been decided just in which set of organs the pathological condition is primary.

There would seem to be no doubt then that those who apparently are in the best position to judge are agreed that our modern athletics are sure to do much harm unless more carefully regulated. Under these circumstances it might be expected that university faculties would take cognizance of these conclusions and insist on limitation of present day customs with regard to the

severe forms of athleics and the training for them.

THE MENINGES IN THE ACUTE INFECTIONS OF THE RESPIRATORY SYSTEM IN CHILDREN.

DURING the progress of pneumonia or bronchopneumonia children frequently suffer from generalized convulsions. These convulsions may often be mistaken for meningitis, and they enter into the picture described by Dupré under the name of meningism, which this authority attributed to a true meningeal reaction without any anatomic lesions.

The clinical and experimental researches of Dr. Roger Voisin, presented in his recent thesis (Paris, 1904), throw a new light on the obscure question of meningism. Clinically, all degrees of meningeal phenomena of bronchopneumonia are met with, such as convulsions, stiffness of the neck, Kernig's sign, even the classical picture of acute meningitis—nothing is wanting.

This variability of the clinical signs is also met with in the conditions presented by the cerebrospinal liquid. Obtained by lumbar puncture the cerebrospinal fluid shows a normal condition, or, on the other hand, there may be slight changes of the albumin, or the amount of sodium chloride present, while in some cases it is purulent.

The meninges themselves present divers lesions, and every condition may be observed from the normal state to congestion, serious edema, or even the inflammatory changes of acute meningitis. One might be led to believe that with these lesions of meningitis and purulent condition of the spinal fluid that a patient would present a complete clinical picture of meningitis with violent convulsions, etc. But this is not the case, because a slight lesion may give rise to an imposing array of head symptoms while, on the other hand, a child with bronchopneumonia may die and the autopsy will show advanced lesions of meningitis, although no symptoms of the affection manifested itself during life.

The pyramidal cell of the cortex consequently presents a peculiar and different reaction according to the case. The variability of the clinical picture is only the expression of the special susceptibility of the hereditary or morbid origin of the nervous centers. They react against the blood infection in bronchopneumonia or the intoxication as Voisin has demonstrated experimentally. All degrees of infection or intoxication of the nervous centers are met with in bronchopneumonia, just as one sees all the various degrees of renal lesions in pneumonia.

The alcoholic subject reacts against the alcoholic intoxication by his liver, kidneys, stomach or brain; in other words, the organs which by heredity is the weak point. It is the same with bronchopneumonia, and the apparition of the meningeal syndrome is favored by nervous heredity.

The prognosis varies according to the anatomic type, but should the meningeal symptoms persist in spite of tepid baths, and if the restlessness is not interrupted by periods of calm with sleep, one should be on guard, because a serious meningeal lesion may be developing.

ECHOES AND NEWS.

NEW YORK.

Bequest to Eye and Ear Hospital.—Dr. William H. Crawford, who died August 28, at 205 West Fifty-seventh Street, left $10,000 to the New Amsterdam Eye and Ear Hospital.

Health Department Funds.—The Health Department has sent to the Board of Estimate its estimate for 1905. According to the figures, the department will need $2,123,500, as against $1,109,391.48 allowed for this year. When the allowances by bond issues and other income are deducted the increase asked is reduced to $577,636.52. The estimate says the increase is due mainly to the hospital fund and salaries increase.

New Hospital for Brooklyn.—For the purpose of instituting and maintaining a charitable hospital in the neighborhood of Fifteenth Street and Fourth Avenue, Brooklyn, the Brooklyn Samaritan Hospital Association has been organized. It will be incorporated, and the work of raising funds will be begun soon. This movement is the outcome of the dispensary work that has been carried on under the auspices of the Fifteenth Street Baptist Church. The proposed institution, however, will be non-sectarian, patterned somewhat after the Samaritan Hospital, in Philadelphia.

Diphtheria in the Bronx.—Diphtheria has been prevalent in West Chester and Throgg's Neck for the last week, and has given the health officials much worry in view of the opening of the public schools. Most of the physicians in the neighborhood of West Chester have had cases and a strenuous effort is being made by the local superintendent of the department to stamp out the disease.

Interpreter for Bellevue.—Ermenegeldo Zordan, a Professor in the University of Padua, who speaks English, German, Italian, Spanish, Polish, Yiddish, and modern Greek as well as he does French, his native tongue, has been appointed official interpreter at Bellevue Hospital, an office that the institution has needed for many years. Professor Zordan, who is on a two years' leave absence from the University of Padua, Superintendent Richard says, is without doubt one of the most talented linguists who ever came to America.

Smallpox on Steamship.—The steamer Campania was held at quarantine several hours because of a case of smallpox on board. The victim, a woman steerage passenger, was transferred to a shore hospital, and twenty-five of the steerage passengers were sent to Hoffman Island for observation. The steamer was released after she had been disinfected by the health authorities.

Analysis of Foodstuffs in New York.—Under the direction of the Department of Agriculture, a chemical

laboratory for the analysis of imported food products has been opened in the Appraiser's Stores building in Greenwich Street, in this city. All necessary apparatus to detect impurities was installed on the tenth floor of the building during the day, and hereafter importers will not be subjected to the delay of having samples sent to Washington for analysis before they can obtain their goods. This laboratory will be the third of its kind in the United States, as there is already one in San Francisco, besides the Department headquarters in Washington. Dr. H. W. Wiley, chief of the Bureau of Chemistry of the department, was in this city to superintend the installation. L. M. Tolman had also come from Washington for the preliminary work. R. E. Doolittle, formerly State Chemist of Michigan, will have charge of the work here, and will be assisted by Alfred W. Ogden and B. R. White.

PHILADELPHIA.

Typhoid Again Increasing.—Typhoid fever cases for August numbered 454 as against 257 in July. The present increase is attributed largely to a broken sewer which discharged for nearly a week into the Schuylkill a short distance above a pumping station.

Mont Alto Sanatorium.—Encouraging reports come from White Pine Camp Sanatorium, near Mont Alto, established by the State for the treatment of consumptives. All the patients in camp are said to be improving and a number have been completely cured. A large area of ground has been laid out in garden plots and in caring for these the patients take their prescribed exercise.

Serum Treatment for Tuberculosis.—A consignment of the Maragliano serum for use in combatting tuberculosis has arrived from Europe and is to be employed by the Phipps Institute. Directions for its use have been sent by Drs. Ravenel and Pearson who have been investigating its properties during the past summer.

Basis of the Weightman Fortune.—The recent death of William Weightman, head of the firm of Powers & Weightman, drug manufacturers, has again revived the story of how a large part of the immense fortune of the firm was derived from the sale of quinine during the Civil War. At that time there were only two concerns in this country making quinine from Peruvian bark—Powers & Weightman and Rosengarten & Sons, both Philadelphia firms. The regular price of the drug at the beginning of the war was $2.10 per ounce. Heavy war duties as well as the general effect of the war sent the price up and the two firms made money rapidly, although the government purchased great quantities of the drug abroad. Neither firm sold quinine directly to the Confederates, though it reached them by way of traders who ostensibly bought it for other uses. These men also reaped a rich profit, for the drug south of Mason and Dixon's line often sold for as high as $15 an ounce; the Philadelphia firms, though having a monopoly of the product, never sold it for exorbitant prices.

The Copper Treatment of Drinking Water.—Interest in this subject still runs high in this city, no doubt because of the condition of the water supply and the imminence of another typhoid outbreak. The Philadelphia *Ledger* of Monday prints a two-column interview with Dr. George T. Moore, in charge of the laboratory of plant physiology in the Department of Agriculture, Washington. In the course of the interview Dr. Moore made this statement: "I am perfectly willing that the *Public Ledger* should say for me, since it asks for a broad, free, unqualified statement, that the death rate in Philadelphia or any other community, from typhoid fever, so far as the disease is caused by infected drinking water, may be wiped out by the scientific use of copper as a germicide." The laboratory experiments in this city, inspired by the announcement of Dr. Moore some time since, are stated by Director Martin as not ready for publication. His statements, as recently published, were rebutted by several well-known chemists of the city and in endeavoring to sift the matter the *Ledger* obtained the interview now made public. Dr. Moore's statements more than confirm those of Dr. Martin, although no official correspondence has passed between the two. The findings of the Agricultural Department grew out of experiments made to destroy algae in reservoirs of drinking water. The germicidal properties of copper as announced are based on laboratory experiments as no public water supply has been treated for bacterial contamination. This is beyond the pale of its duties. Moore considers the popular prejudice against copper vessels because of fear of poisoning as absolutely unwarranted; he was surprised by the adverse opinions of the Philadelphia chemists who opposed the views of Dr. Martin. He explains them only by the supposition that they are chemists only and not bacteriologists, biologists, physiologists or students of pathogenic growths. What is popularly called verdigris is carbonate of copper formed by the action of carbonic acid on the metal and is, for all the purposes of popular argument, not soluble in water. Verdigris proper is an acetate or acid product and would not form under such conditions. Further experiments are to be conducted by the Department, and it is not unlikely that they may look to the practical application of the treatment to large bodies of water.

CHICAGO.

Hospital for Oak Park.—Fifty Oak Park residents, among them a number of physicians, recently met and discussed plans for a proposed hospital. All agreed to support the project. After several speeches a committee of ten was appointed to arrange for a larger meeting to further the plan.

Opening Exercises of Dearborn Medical College.—The Dearborn Medical College opened its new home at Michigan Avenue and Twelfth Street in the building formerly occupied by the Chicago Manual Training School, August 30. The assembly hall was decorated with flags, ferns and flowers, and was filled with students and friends. Dr. L. Blake Baldwin, president of the college, introduced Dr. George F. Butler, superintendent of the Alma Springs (Mich.) Sanitarium, and Dr. Homer M. Thomas, of Chicago, who delivered addresses. The faculty has expended $10,000 in remodeling and furnishing the building, and the school begins with an enrollment of two hundred students. This is the second year of this night medical college, which began last season in the Illinois Pharmacy Building with 135 students.

New Hospital for Englewood.—The Swedish-American Hospital Association of Englewood was recently given a charter at Springfield. Capital stock is $100,000, all of which must be subscribed before work on the building is begun. The hospital will be in Englewood, but the site has not been chosen.

State of Chicago's Health.—The *Bulletin* of the Health Department for the week ended August 27, contains the following gratifying report: "If that nation is to be accounted happy that has no history, why not the city whose healthfulness furnishes little or nothing of the material of which history is mostly made—death, disease and disaster, pestilence, plague and woes unnumbered? With two-thirds the usually sickly summer season already passed, the August death rate is as low as the rates of the healthful June and November, the

two months of least mortality in the twelve. Even with an increase of thirty-five more deaths reported over the number of the previous week the total 472 is 114 less than for the corresponding week of last year and the rate per 1,000 of population is more than 16 per cent. lower than the rate of that week. One of the most gratifying features, next to the continued low mortality among infants and children, is the infrequency of typhoid fever. This disease always shows a seasonal increase, beginning in July and culminating in October. The increase has averaged for thirty years more than 63 per cent. in August over the rate of the first six months of the year, which would make the typhoid deaths for this month about 47. During the last twenty-seven days there have been but 26 deaths from typhoid fever reported and a total for the month is not likely to be more than 31 or 32. In August, 1903, there were 51 deaths from typhoid fever. A similar, but not so marked, reduction in the acute intestinal diseases—also due largely to impure water—is noted. Thus far during the month there have been 441 deaths due to this class of diseases. In the corresponding period of last year there were 505 such deaths; during the week there were 102 acute intestinal disease deaths and one year ago there were 142. Cool weather, pure water and the improved quality of milk supply are the principal factors producing these results."

Fourth-of-July Lockjaw Record.—Anent an interesting article, which appears in the *Journal of the American Medical Association,* under date of September 3, the *Chicago Record-Herald* of same date contained the following editorial on "Fourth-of-July Tetanus": "If the use of pistols, cannon crackers, cannon and cartridge canes had been prohibited on the Fourth of July there would have been only one death from Fourth-of-July tetanus in the entire country this year. This statement is made on the authority of *The Journal of the American Medical Association,* which for two years has collected Fourth-of-July accident statistics in the most complete possible manner. As it was, 105 cases of tetanus were reported, in 91 of which death is known to have resulted. In 74 of these cases blank cartridges caused the injuries. The record, bad as it is, is nevertheless gratifying in comparison with that a year ago, when 415 tetanus cases resulted from the glorious celebration, among which were only seven known recoveries. *The Journal* finds that tetanus due to other causes than Fourth of July injuries is, if anything, more than usually common this summer. It also believes that last year's record of Fourth-of-July deaths was not above average for recent years. It therefore feels justified in inferring that the campaign against the lockjaw Fourth in the public and professional press, taken in connection with the stricter legislation and the more careful medical treatment of accidents which have been brought about by it, is responsible for the greatly improved showing of this year's celebration. It urges that the efforts for a sane Fourth which have been thus far made should be continued with even greater vigor until our national holiday will become again a pride, instead of a cause of disgrace, to the country. In Chicago, where the death list was reduced from the sixteen of 1903 to five, further action should clearly be taken. The first thing to be done is for the council to pass an ordinance prohibiting absolutely the sale of toy pistols and similar death machines, instead of merely prohibiting their sale to minors as at present. Beyond that, however, agitation should be begun for the passage by the state general assembly of a law prohibiting the manufacture of such articles. When the toy pistol, cannon cracker and the cartridge-cane are driven out of existence, plenty of varieties of fireworks will still remain to give old and young all the noise and all the entertainment they can need on the year's day of greatest enthusiasm."

GENERAL

Arrival of Professor Orth.—Dr. J. Orth, professor of pathology and dean of the University of Berlin, arrived on the Zeeland Sept. 5, accompanied by his wife. Professor Orth, on the death of Professor Virchow, was called by the faculty of the University of Berlin from Göttingen to fill the vacancy. Professor Orth was, early in his career, one of Virchow's assistants. He was the chief physician in the operation recently performed on Emperor William's throat. Many of his pupils are now prominent American physicians. The professor will go to Albany, Buffalo, Niagara Falls, Chicago and St. Louis. He will be entertained at the White House by President Roosevelt on September 27, and dinners will be given for him in Baltimore by educators of Johns Hopkins and by a body of his former pupils, now in America.

Smallpox in Connecticut.—The second outbreak of smallpox in South Manchester within the last two years was discovered September 2, when three in one family were stricken.

Tuberculosis Sanitarium at St. Louis.—East St. Louis is to have a $100,000 sanitarium for the cure of consumptives. A tract has been purchased as the site for the new enterprise. The company will be capitalized at $200,000. Plans for the buildings are being drawn, and it is intended that the sanitarium shall be open to patients early in the spring.

Hay-fever Epidemic.—An extraordinary epidemic of hay-fever has developed in Buffalo and vicinity within the past two or three days. Several thousands of Buffalonians are sneezing, choking, and suffering from this enervating ailment; the attack was as sudden as it is sweeping.

Panama Sanitation.—A long step toward the sanitation of the Isthmus of Panama will be accomplished within six months by the installation of a complete system of waterworks for the city of Panama. The reservoir from which the city water supply will come is partly completed, a dam constructed along the line of the canal by the French company being utilized, and the lake formed thereby will contain a supply of pure water sufficient to furnish each inhabitant of the city with fifty gallons daily for five months, even if no rain falls in that period.

Sanitary Work at Canal Zone.—The sanitary officials at the canal zone have reported that quarantine stations have been placed at both ends of the canal route to prevent the spread of yellow fever and the plague, the latter generally coming from Chili and Peru. The most active methods for preventing the plague from breaking out are being employed. The methods are the same that are used in Havana. Sewers are being built and all water is being covered up as much as possible. Plumbing is being introduced, and a campaign is being conducted to teach the people to better their conditions. A large force of men is employed killing the mosquitoes, and gangs are filling up the swamps to keep the pests out of the country. To keep out the plague, an eight-day quarantine to vessels from infected ports has been established.

Sanatoria for Tuberculous Poor in England.—The great friendly societies of England, the trades unions and other organizations of workers, have formed a national committee which has for its purpose the establishing of sanatoria for workers. The municipalities are also being urged to provide beds for all persons of the working classes who need to be cared for, and it is estimated that an annual expenditure of $5,000,000

would be quite sufficient for the isolation of all tuberculous patients. As one-eleventh of the total expenditure of $60,000,000 annually for the public care of the poor of Great Britain is thought to be due to pauperism caused by this disease, the expenditure of this sum would not seem to be unreasonable if, by this means, the disease could be stamped out.

Society to Study Alcohol and Narcotics.—The American Society for the Study of Alcohol and Narcotics was formed last June by an amalgamation of the American Association for the Study of Inebriety and the Medical Temperance Association. Its plan of work is to encourage and promote more exact scientific studies of the nature and effects of alcohol in health and disease, particularly of its etiological, physiological, and therapeutic relations. Second, to secure more accurate investigations of the diseases associated or following from the use of alcohol and narcotics. Third, to correct the present empirical treatment of these diseases by secret drugs and so-called specifics, and to secure legislation prohibiting the sale of nostrums claiming to be absolute cures containing dangerous poisons. Fourth, to encourage special legislation for the care, control, and medical treatment of spirit and drug takers.

Radio-active Wool.—A new method of employing radium in medicine has been described by E. S. London, a Russian physician, which consists of using cotton-wool which has been submitted to the action of radium emanation. The result of a series of experiments seems to justify the conclusion that the effects of the radium emanation and of the direct action of the radium are the same, consisting in an inflammation of the skin and a destruction of protoplasm. Wool so treated, which is convenient for easy distribution over the body, when packed in hermetically sealed jars or other containing vessels, loses its radioactivity very slowly, and can be sent to any distance desired. From a few milligrams of radium a large quantity of wool may be prepared, and thus widely extend the use of a small amount of radium, whose cost is so great as to interfere with its widespread use. Radio-active wool, therefore, may become a stock pharmaceutical preparation, but it still remains for the medical profession to determine its therapeutic value.

Breathing in High Altitudes.—The difficulties of respiration at high altitudes has been believed to be due to the reduced tension of the atmospheric oxygen. Professor Mosso, an Italian scientist, has recently disproved this theory by showing that if the pressure of the mixture of oxygen and nitrogen making up ordinary air be reduced to one-third of an atmosphere, and then the proportion of oxygen be increased so that its partial pressure is the same as normal, the mixture is breathed with inconvenience, accompanied by an abnormal respiration and pulse. By taking supplies of pure oxygen and mixtures of gases to the summit of Monte Rosa and analyzing the blood it was shown, however, that a diminution in the amount of carbon dioxide in the air due to the low pressure was doubtless responsible for much of the trouble in respiration. Proof of this was afforded by breathing a mixture of 80 per cent. of oxygen and 20 per cent. of carbon dioxide on top of Monte Rosa, with a feeling of pleasure and ease, while the effect of the same mixture near the sea-level in Turin was to produce giddiness and vomiting. If this discovery is substantiated by further experiments it seems that by carrying cylinders containing this mixture of gases the highest mountain peaks can be scaled, while the mere provision of oxygen is of doubtful utility.

Alcoholism in German Schools.—An interesting investigation on the prevalence of alcoholism among school children in Germany has recently been published. Its author, Dr. Goldfeld, believes that the situation is serious, and should be brought to the attention of the parents by means of addresses at meetings and by the distribution of essays on the evil effects of alcohol. The investigator is medical officer of the public schools of Schöneberg, a suburb of Berlin, and his examination included 967 children, 470 of whom were in a boys' school and 497 in a girls' school. Of these, 496, or 51.3 per cent., were accustomed to drink from one to two glasses of beer daily, while 299, or 30.9 per cent., took spirits more or less frequently. The favorite beverage was malt beer, but all kinds of beer and various kinds of spirits were taken, the sweeter liquors being preferred by the girls. Dr. Goldfeld was informed by the teachers that the children addicted to the use of spirits were especially lazy, absent-minded, and inclined to lying. Neither children nor parents heeded Dr. Goldfeld's warning. Of the 470 boys mentioned, 264, or 56.2 per cent., drank beer daily, and 139 were casual drinkers. One class was found in the school where practically the entire membership (96.2 per cent.) were accustomed to use alcohol in some form or other, while in another class there was only a third. The consumption of spirits by different classes varied from 17.7 to 60.4 per cent. With the girls the figures ranged somewhat lower, but still they are considered serious, and from the data presented there apparently is good opportunity for a scientific temperance propoganda in the German schools.

OBITUARY.

Dr. E. G. Simons, of Ripley, N. Y., was instantly killed by a Lake Shore freight train in Glenville, Ohio, on September 1.

Dr. William Hammet Martin, sixty-four years old, died at his home, No. 221 West 135th Street, New York city, on September 3 after an illness lasting several weeks, from cancer of the stomach. Born in Louisville, Ky., later a graduate of Columbia University and the College of Physicians and Surgeons, Dr. Martin for some years practised in Madison, N. J., and afterward in this city.

Dr. Millard Fillmore Cyphers, died at his home on Woodland Avenue, Philadelphia, August 29, aged forty-five years. He was born in Wilkesbarre, and after graduating at the University of Pennsylvania in 1887, practised for some years in his native city before coming to Philadelphia.

Dr. Henry Tuck, vice-president of the New York Life Insurance Company, died September 2 at Seabright, N. J., after a long illness. Dr. Tuck was born in Barnstable, Mass., in May, 1842. After a preparatory training at the Boston Public Latin School he entered Harvard College, from which he was graduated in 1863. Soon after leaving Harvard, Dr. Tuck took a course in medicine at the Harvard Medical School and received his degree in 1867. He took part in the last campaign of the Civil War. He was appointed acting assistant surgeon in the army and was present at Lee's surrender at Appomattox. Later he went abroad to complete his study of medicine, the greater part of his time being spent in Vienna, where he studied at the General Hospital. Returning to this country in the latter part of 1868, he established a large and lucrative practice in Boston. After nine years in that city, in which time he acted as medical examiner for the Mutual Life and several other insurance companies, Dr. Tuck came to this city. In November, 1877, he was elected medical director of the New York Life Insurance Company. He became a trustee of the company in 1878, senior medical director in 1883, second vice-president in the same year, and senior vice-president on the election of Mr. Beers to the presidency in 1885. For twenty-seven years

Dr. Tuck had been a directing force at the home office, and in the board of trustees and as an executive officer he had given to the company the best service of a trained mind, a large experience and a whole-hearted devotion to its highest interests. Dr. Tuck was twice married. His first wife, whom he married in 1873, was Miss Emma R. Beers. After her death and in September of last year, he married Eleonore Hammond. While in Boston Dr. Tuck became a member of the principal medical societies of that city, and was one of the physicians of the Massachusetts General Hospital. He was a member of the University and Reform clubs, the Society of Mayflower Descendants and the New York Academy of Medicine.

DR. JOHN L. GORMLY, one of the rising young physicians in Brooklyn, died September 6, of heart trouble, at his home, Ocean Parkway and Avenue D, Brooklyn, N. Y. He was twenty-nine years old. He was on the visiting staff of St. Mary's Hospital.

SPECIAL ARTICLE.

EXCURSIONS IN OLD NEW YORK MEDICINE.—V.

DR. DAVID HOSACK AND HIS BOTANICAL GARDEN.

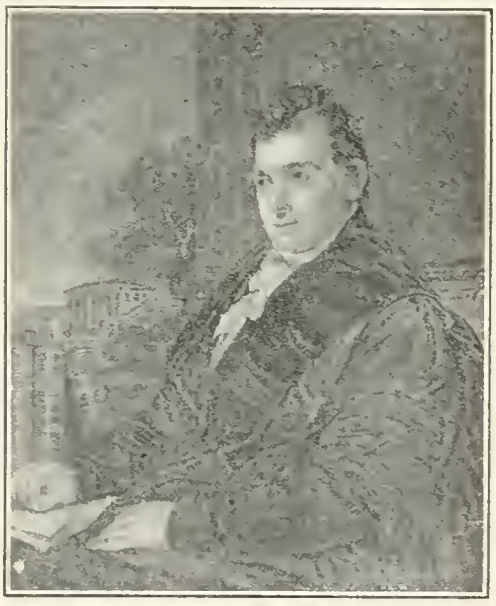
DURING the present year the newspapers have frequently called attention to the fact that the property owned by Columbia University in the heart of the city (Fifth Avenue and larger Forties) is a legacy from the State to the institution, of Dr. David Hosack's Botanical Garden. To most New York physicians the name of Hosack is familiar because the main meeting hall at the Academy of Medicine is called after him. This distinction is due, partly at least, to a bequest to the Academy on the part of his widow. Dr. Hosack deserves, however, to be a familiar character to members of the medical profession in New York City and State for many other and better reasons than even his botanical garden or the family interest in the Academy of Medicine. There is perhaps no one person in the nineteenth century to whom New York medicine is more deeply or widely indebted than to this learned, faithful, generous, liberal man, of whom it might well be said, in the words of the old Roman dramatist, that "nothing that was human was foreign to him."

Dr. Hosack is one of the physicians, not many in number altogether, who have deservedly found a place in the volume, "Pioneers of Science in America,"[1] which was a reprint of the sketches of the lives and scientific work of the most prominent American scientists, edited and revised by the late Dr. William Jay Youmans, who had been for many years the editor of the *Popular Science Monthly*, in which the sketches originally appeared. The first paragraph in the sketch, written by Dr. Youmans, gives an excellent idea of Dr. Hosack's prominence as a man as well as a physician in New York City life:

"In the early part of the nineteenth century no citizen of New York was held in higher honor than was De Witt Clinton. Closely associated with Clinton in the leadership of the civic life of the day, but holding rigidly aloof from politics, was Dr. Hosack. 'It was not infrequently remarked by our citizens,' said his pupil and associate, John W. Francis, 'that Clinton, Hosack and Hobart were the tripod on which our city stood.' Dr. Hosack was one of the founders of the New York Historical Society and its president from 1820 to 1828. He was also instrumental in founding an art society, was prominent in various scientific, literary and humane undertakings, and, if his lead had been followed, New York would have to-day a botanic garden equal to any in a European metropolis."

When Dr. Youmans wrote this, New York was without a botanical garden. Since then, thanks to the inspiring influence of Hosack's early work, this municipal defect has been made good, and we now have what even Dr. Hosack's biographers would pronounce "a botanic garden equal to any in a European metropolis," and we may even add, without undue conceit, far better than the great majority of the older cities may ever hope to have, since the energetic work of Dr. N. L. Britton is now bearing fruit.

Meantime we must not be blind to the wonderful pioneer work accomplished nearly a century ago. How extensive was Dr. Hosack's work and how ambitious his aim in having the botanical garden as complete as possible may be gathered from a paragraph from his son's biography. Hosack's idea was to make it an institution similar to the Jardin des Plantes in Paris. He meant to include all the features of that institution, even the zoological and mineralogical collections. In a word, a hundred years ago he conceived the idea of giving New York a botanical garden and zoological garden besides a museum of natural history.



DR. DAVID HOSACK.

His son says: "At this time there were under cultivation nearly fifteen hundred species of American plants, besides a considerable number of rare and valuable exotics. To this collection additions were made from time to time from various parts of Europe, as well as from the East and West Indies. It was the intention of the founder of this beautiful garden, had his means been more ample, to devote it to the sciences generally, more especially those of zoology and mineralogy. This, however, he was compelled, from want of fortune, to relinquish, hoping that the State of New York would at some future day be induced to carry out the plan, as suggested by him, similar in all respects to that of the Garden of Plants in Paris; but in this he was disappointed. The State purchased the garden from him, but, like many other public works unconnected with politics, it was suffered to go to ruin. While it was in his possession it afforded him many a pleasant hour of

1 New York: D. Appleton & Company, 1896.

recreation, and served to abstract him from the cares and anxieties of an arduous profession. Frederick Pursh, author of the *Flora Septentrionalis*, was for several years curator of this garden."

In the midst of his scientific work, however, Hosack did not forget his duties toward his fellowmen, but, on the contrary, was constantly occupied with humanitarian progress. A society which had existed in New York up to his time for the purpose of visiting prisoners in jail, in order to be of help to them, if possible, and which actually accomplished the great good of supplying prisoners for debt with provisions, was developed under the stimulus of Hosack's enthusiasm into the Humane Society, whose aim was not only the relief of prisoners, but also of the poor in order to prevent the commission of crime, if possible, and even included some safeguard for animals against heartless cruelty. The City Dispensary, for the care and treatment of the ailing poor, received unstintingly of his time and attention. It was he who first advocated the necessity for a separate hospital building for contagious diseases. More than any other he contributed to the spread of popular knowledge with regard to the necessity for quarantine, and so made its institution practicable. Public sanitation was always a matter of deep interest to him, and it was he who first urged that the city's sewers should be made to discharge at the outer piers instead of the bulkhead line.

Notwithstanding his devotion to so many interests that must have made very serious demands upon his time, Dr. Hosack somehow found opportunity to make a large number of contributions to medical literature. When quite a young man he began the publication of *The Medical and Philosophical Register*, the quarterly journal, in the publication of which Dr. John W. Francis was associated with him. Later in life he published three volumes of medical essays containing articles contributed to various journals, occasional addresses before scientific bodies and medical societies, introductory lectures to his regular medical courses the College of Physicians and Surgeons, and the like. He edited an English work on the practice of medicine that had been written by Dr. Thomas, of Salisbury, England, and added an extensive appendix, making the work more practically useful for American physicians. Later on he also published a text-book on medicine of his own, which ran through several editions.

DR. HOSACK'S MEDICAL STUDIES.

In Dr. Hosack's career there are traces of the existence of a custom with regard to education which unfortunately does not continue to the present time, though it still obtains, to some extent at least, at the German universities. Instead of spending his senior year at Columbia, he spent it at Princeton. His idea was to have the advantage of being brought intimately in contact with certain scholarly professors at the college of New Jersey, whose work had attracted his attention. As he says himself:

"My great inducement for removing to Princeton was my desire to complete my course of collegiate studies as soon as possible, in order to devote my exclusive attention to medicine, to which I had now become ardently attached, and that I might also have the benefit of attending the valuable lectures on Moral Philosophy and Elocution delivered by the learned president of that college, the Rev. Dr. Witherspoon; those of Belles-Lettres and Composition, by the vice-president, the Rev. Dr. Samuel Stanhope Smith, and the instruction in mathematics and natural philoshophy, by the celebrated mathematician, Dr. Walter Minto, all of which presented attractions which I could not resist."

Having finished his course at Princeton, he returned to New York and resumed his medical studies, where they had been interrupted shortly after the occurrence of the Doctors' Mob. He now had the advantage of being able to give them his undivided attention, and he has no little to say in praise of the medical opportunities which New York City at that time afforded. He did not consider, however, that he had exhausted medicine, merely because he had attended the lectures of New York professors, but knowing, by reputation, the distinguished professor of medicine in Philadelphia, he resolved to visit that city and take advantage of the stimulus that would be afforded by contact with other distinguished medical minds. In this we see once more that eclecticism which, as we have said, is no longer considered the proper method, though often occurring, in fact being almost the rule, in the German universities, and undoubtedly making for a breadth of knowledge and a development of critical faculty that cannot help but prove helpful in the after career. Dr. Hosack's own account in this matter seems worth while giving here because it shows the independent character of the man and the student only just entering upon manhood and his deep-seated desire for knowledge and the deep-seated desire for the opportunities of gaining it:

"I attended the lectures on Anatomy and Physiology, delivered by Dr. Wright Post; those on Chemistry and Practice of Physic, by Dr. Nicholas Romayne, and the valuable course on Midwifery and the Diseases of Women and Children, by Dr. Bard. I also attended the practice of physic and surgery at the almshouse, which then offered the only means of clinical instruction in this city; they were, however, very ample, the house being daily visited by Dr. Post, Dr. William Moore, Dr. Romayne and Dr. Benjamin Kissam. In the autumn of the year 1790, being desirous of obtaining all the advantages of instruction which the United States at that time afforded, I proceeded to Philadelphia, the medical school of which had already acquired great celebrity from the learning of its professors, especially Drs. Shippen, Rush, Kuhn, Wistar and Barton. At that time a division already existed among the Faculty, which led to the institution of a medical college as a rival school to that connected with the university, and not a little contributed to the benefit of both, and the ultimate advancement of the science of medicine in Philadelphia.

I entered as a regular pupil, and attended all the courses of lectures delivered during the winter in the university. I also attended those delivered on the Theory and Practice of Physics, by Dr. Rush, then a professor in the College of Philadelphia, as well as his clinical instructions in the Pennsylvania Hospital. In the summer of the succeeding year, after the usual private and public examination, I was admitted to the degree of Doctor of Medicine in the University of Pennsylvania, upon which occasion I duly defended an inaugural dissertation on cholera morbus, in which I endeavored to illustrate the doctrine of Dr. Kuhn on that subject, that an acid in the primæ viæ, chiefly the effect of the use of ascessants, was the most usual proximate cause of that disease. Upon that subject my views have been materially changed since that period."

One experience of Dr. Hosack's medical student days, his part in the so-called Doctors' Mob, deserves to be recorded in particular because it shows the temper of the times. We venture to give two rather different descriptions of it because they demonstrated how differently a striking event may appeal to two otherwise sympathetic stories.

In his very interesting narrative of medicine in America, James Gregory Mumford, of the Harvard Medical

School,[1] gives the following picturesque account of what came afterward to be known as the Doctors' Mob:

"In New York medical teaching languished until 1813. Though there lived and practised in the city a number of first-rate men, their dissensions and jealousies for years prevented medical progress. The hospital made some history, however, and was launched anew after nine years of labor. In the interval between 1782 and 1791 the Society of the Hospital held annual meetings and elected officers, but the buildings were used for almost any purposes other than those for which they were erected. Sometimes poor folk were given the rooms as lodgings. One of the faculty (Bayley) gave some anatomical demonstrations there and did some operating, and for a few months the legislature sat in the hospital, but the most conspicuous event connected with the place during this dreary period was the once famous 'Doctors' Mob.' It was in the anatomical era, when students and doctors were making dissections there. There was hard feeling and suspicion about their finding bodies for the work—natural enough, as any one must admit who reads the old demonstrators' own statements of their modus operandi in procuring material. They seem to have rifled graves whenever they could, regardless of sex or condition, and most people conceived an 'ignorant prejudice' against having their mothers and sisters dissected by a parcel of callow students.

"The 'Doctors' Mob' made itself 'famous' on Sunday, April 13, 1788. While the dissecting was under way, a boy peeped in at the window, and some jocular individual who spied him from the room waved a dead arm at him, so the boy said. At any rate, he was duly impressed, and confided his experience to whomsoever would hear him, with the result that an angry crowd tried to take over the custody of the building and break up the anatomical course. The students and doctors thought it prudent to run away, and found sanctuary in the jail, with the mob after them. Then John Jay came upon the scene, exactly how or why does not appear, and peppery old Baron Steuben and Mayor James Duane, reading the riot act, backed by a handful of militia. The mob proceeded to hustle the dignitaries and knocked down Baron Steuben, who lost his temper and called out, 'Fire, Duane, fire!' The militia fired, seven rioters were killed, many were wounded, and the rest went home. That was the famous 'Doctors' Mob,' and the doctors got no sympathy. The governors denied their responsibility for the doings at the hospital, sent in a bill of twenty-two pounds seven shillings tenpence to the breathless doctors, and, after collecting the money, closed up the buildings.

"After that the governors seem to have come to their senses, and really determined to apply the hospital buildings to their original purposes. At any rate, within three years the reform had been accomplished, and in January, 1791, the hospital was again opened. Samuel Bard helped the starting and so did Malachi Treat."

That the "Doctors' Mob" was a much more serious affair for those who were voluntary or involuntary participants in it might be judged from this account, and will be readily realized by any one who reads the paragraph with regard to it in the memoir of Dr. David Hosack, published by his son, Alexander Eddy Hosack. At the time Dr. Hosack was pursuing his studies in the regular course at Columbia College. His son says:

"Finding his time not fully occupied in the commencement of the junior year, he resolved upon the study of medicine, and, accordingly, in May, 1788, entered as a private pupil with the late Dr. Richard Bayley, an eminent surgeon in New York. He had scarcely begun his studies before the celebrated 'Doctors' Mob' occurred, which threatened serious results to those concerned; it arose in consequence of the imprudence of some of the students carelessly pursuing dissection in the building upon the site since occupied as the New York Hospital. This mob caused many of the professors to absent themselves from the city, and others to seek shelter in the city jail. Mr. Hosack, with the rest of the students interested, learning that the mob had seized upon and demolished the anatomical preparations found in the lecture-room above referred to, repaired immediately to Columbia College, with the view of saving such specimens as were to be found in that institution. Before reaching the college, however, and when on his way in Park Place, he was knocked down by a stone striking him on the head; he would in all probability, have been killed had it not been for the protection he received from a neighbor of his father, Mr. Mount, who was passing at the time, and took care of him. He never saw that gentleman afterward without feeling and expressing his gratitude to him for his kindness."

[1] J. B. Lippincott Company, Philadelphia, 1903.

SOCIETY PROCEEDINGS.

ILLINOIS STATE MEDICAL SOCIETY.

Fifty-fourth Annual Meeting, held at Bloomington, May 17, 18 and 19, 1904.

The Society met in the Unitarian Church, under the presidency of Dr. Carl E. Black, of Jacksonville, Ill.

The scientific work was divided into two sections, medical and surgical.

Brief abstracts of many of the papers are herewith submitted.

Contagiousness of Typhoid Fever and the Vitality of the Typhoid Germs.—Dr. F. D. Rathburn, of Galesburg, read this paper. He spoke of the vitality of the typhoid bacillus in the living body, and discussed the length of time after convalescence when the patient is liable to communicate the disease by the excreta. He also pointed out the vitality of the germs outside the living body, and their power to generate in soils and other favorable media. He emphasized the importance of disposing of the excreta in order to prevent the spread of the disease. The germ has been shown to remain active for a considerable length of time after the fever in (1) posttyphoid abscess; (2) the urine; (3) contents of lung cavities; (4) gall-bladder, and (5) evacuations from the bowels. The proper disposition of the excreta is the only method of prevention. Cremation he considered the best method. When cremation is not practicable, he suggests that the excreta be deposited in heavily glazed earthenware receptacles, treated with germicides, and buried deeply at a distance from the water supply.

Mental Disorders of Neurasthenia.—Dr. Frank P. Norbury, of Jacksonville, said that the mental symptoms of this disease are of importance in every case. They vary from slight mental incapacity to pronounced state, "borderline" to insanity. The principal symptoms mentioned are introspection, imperative conceptions, morbid fears, irritability (marked by absence of symmetry), nagging, fault-finding, and excessive emotional outbreaks. The physical factors and differential diagnosis were discussed at length. The treatment consists of isolation, systematized rest, with adjuvants indicated in each case; also treatment of associated physical factors.

Treatment of Appendicitis from a Pathological Standpoint.—Dr. E. C. Franing, of Galesburg, pointed out the differences of opinion on the treatment from a clinical standpoint. He spoke of the

treatment of the various forms of the disease, paying particular attention to the Ochsner and operative treatments.

Relation of Medicine to Surgery.—Dr. James E. Coleman, of Canton, thinks that whereas in former days the surgeon was first and foremost a fine physician, now surgeons neglect medicine. He discussed some avoidable surgical affections of the ovaries.

Leucemia; with Special Consideration of Its X-ray Treatment.—Dr. Everett J. Brown, of Decatur, gave reasons for reporting and standpoints taken in regard to this disease. He gave the history of a case of splenomedullary leucemia having a leucocyte count of 800,000, with a greatly enlarged spleen, in which the use of the X-ray caused the disappearance of all symptoms. He considered the cases in literature so treated, and presented a summary.

Polyneuritis.—Dr. L. Harrison Mettler, of Chicago, stated that multiple neuritis is a much-abused term. The general conception of the disease and the text-book descriptions of it are far too narrow. It is a disease more or less of the entire nervous apparatus. He spoke of the central and peripheral types of the disease; of the relative significance of the interstitial and parenchymatous disease processes. He spoke of the relative importance of the particular etiological influences, and pointed out the clinical indications of the extensive nature of the disease. Pathological proofs were advanced. He referred to the differential diagnosis of types of the disease requiring variable treatment.

Dr. Thomas H. Bath, of Bloomington, read a paper in which he brought forward successive scientific data confirming the mosquito as the definite host of malarial fever.

Dr. James Moreau Brown, of Chicago, presented a general consideration of speech disorders, laying particular stress on etiology and treatment, and then discussed the so-called stammering institutes. He gave reasons why cases of this character should be cared for by the physician.

The Pneumonia Problem.—Dr. Arnold C. Klebs, of Chicago, spoke of investigations into statistical data regarding this disease, and its increase in the United States and abroad. He made a comparison of non-tuberculous respiratory diseases, and tuberculosis, both clinical and statistical. He pointed out the dangers of pneumonia to the individual and to the community, and how they can be met.

Dr. Charles J. Whalen, of Chicago, referred to the increasing prevalence of the disease, and gave a comparison of mortalities from pneumonia and tuberculosis. He pointed out the possibility of making headway against the disease from a prophylactic standpoint. The public should be educated as to the dangers of pneumonia. There is no known specific for it. Expectant treatment is the most satisfactory, and among other things he mentioned rest, ventilation, sponging, elimination, poultices and glycerin; also the value of antipyretics, serum therapy, venesection, arterial sedatives, oxygen, opium, creosote, normal salt solution, suprarenalin, stimulants, expectorants, etc.

Brain and Sinus Diseases Resulting from Purulent Otitis Media.—Dr. A. H. Andrews, of Chicago, said that brain and sinus complications are more common that is generally supposed. He stated that pus in the mastoid escapes in one of six directions. The intracranial complications may be general meningitis, extradural abscess, cerebral abscess, cerebellar abscess, and sinus disease. He expatiated at length upon the symptoms and treatment, followed by a report of cases.

Joint Affections as Viewed by the Internist; Their Classifications and Brief Considerations.—In this paper, Dr. August F. Lemke, of Chicago, pointed out the distinguishing features between the joint diseases known as the rheumatic arthritides, and the group known as arthritis deformans. He discussed the treatment of some of the more important joint lesions.

Dr. H. W. Chapman, of Whitehall, reported a case of mastoid operation which embraced some unusual features.

Dr. R. R. Campbell, of Chicago, considered the differential diagnosis between pseudomembranous angina of syphilis and angina of diphtheria. He pointed out the difficulties encountered, referred to the treatment, and the results.

Dr. Norval H. Pierce, of Chicago, reported additional cases of sigmoid sinus thrombosis from middle ear suppuration.

Middle-Ear Suppuration.—Dr. Willis O. Nance, of Chicago, in discussing this disease, stated that acute otitis media of infancy and early childhood was frequently an unrecognized process. The recent investigations of Ponfick, Barth, and others demonstrate that a large proportion of infants and young children at some time suffer from middle-ear inflammation. The dangers from non-recognition were pointed out; also the close relationship between acute purulent otitis media and acute infectious processes other than diphtheria and scarlet fever, namely, gastro-intestinal disturbances and bronchopneumonia. He mentioned the structural variations between the infant and adult middle ear, and the diverse characteristic manifestations of inflammation in each. Considerable attention was paid to the diagnosis and treatment of acute infantile otitis media.

Ulcers of the Cornea.—Dr. William H. Wilder, of Chicago, in speaking of infectious ulcers of the cornea, said that the underlying cause is to be sought in impaired vitality of the tissues from a general local depraved nutrition. The active cause is usually some trauma which is supplemented by a virulent infection. The source of the infection is frequently in the tear sac. He emphasized the importance of prompt recognition and active treatment. Cauterization of the ulcer plays a prominent rôle in the treatment, as well as constitutional measures.

Cholecystitis.—Dr. M. L. Harris, of Chicago, in dicsussing this affection, spoke of the influence of microorganisms in its etiology. He referred to the great length of time microbes may remain active or retain their vitality in the gall-bladder. He pointed out the great frequency with which cholecystitis is mistaken for other conditions. He referred to the advantages and necessity of drainage of the gall tract in cases of cholecystitis, and the length of time drainage should be continued.

Kidney Surgery.—Dr. Arthur Dean Bevan, of Chicago, gave a brief historical review of this subject, and mentioned the pathological conditions warranting surgical interference. He likewise mentioned the means of diagnosis, and in discussing the surgical treatment, referred to nephrorrhaphy, nephrotomy, enphrolithotomy, nephrectomy and plastics on the kidneys and ureters. Attention was directed to the prognosis after kidney operations.

Some Interesting Cases of Subcutaneous Injuries of the Abdominal Wall and Viscera.—Dr. D. N. Eisendrath, of Chicago, pointed out the necessity for a more general knowledge of the subject by the general practitioner as well as the surgeon, saying that many lives might be saved by prompt recognition of serious injuries of the abdominal viscera in which there is

only slight injury of the skin. He divided the abdominal organs into solid and hollow viscera. He alluded to the greater amount of protection of certain organs; discussed the manner in which injuries occur, and the mode of examination for the purpose of making a diagnosis. He reported a number of cases, analyzed statistics, and drew deductions from the same.

Fissure in Ano.—Dr. J. Rawson Pennington, of Chicago, discussed the office treatment of fissure in ano. He referred to the etiological factors and pointed out the more important symptoms of the affection. After speaking of the diagnosis, he considered the non-operative and operative treatment, and mentioned divulsion of the external sphincter without the use of the ordinary general or local anesthetic.

Dr. S. C. Stremmel, of Macomb, read a paper in which he made a plea for early and interval operations in cases of appendicitis. He presented some interesting statistics.

Pregnancy and Appendicitis.—Dr. Charles B. Reed, of Chicago, spoke of the reciprocal influence existing between the inflamed appendix and the fruit sac, and of the disastrous consequences for the gestation and fetus. He detailed the mortality statistics of this condition as compared with other serious complications of pregnancy. The difficulties of diagnosis during pregnancy were emphasized. He spoke of the desirability of adopting a definite mode of procedure in these cases.

Dr. J. F. Percy, of Galesburg, reported a case of intestinal obstruction. He insists upon early operation, and outlined the best methods of treatment before consent for operation is obtained. He pointed out the wisdom of temporizing operative methods in a case of intestinal obstruction where exhaustion is extreme.

X-ray Therapy.—Dr. Charles D. Center, of Quincy, gave a review of the cases reported to the Society one year ago, with some additional notes used as illustrations. He pointed out the difficulty of telling before treatment whether benefit will follow the application of the X-rays or not. He reiterated that more is claimed for the rays therapeutically than is justified, saying that this claim arises from some apparently brilliant results which are not supported clinically by the lapse of time.

Placenta Previa.—Dr. Henry F. Lewis, of Chicago, discussed some practical points in the diagnosis and treatment of placenta previa.

Antenatal Pathology.—Dr. Charles F. Paddock, of Chicago, in a paper on antenatal pathology, stated that there is a fetal pathology which has for its etiology ceratin factors which could have been prevented. Every case of pregnancy should be considered as an abnormal condition, requiring the advice and attention of a physician. A neglect to do this often means injury to the fetus. The fetus suffers from a hereditary taint, notwithstanding the possibility of such a condition being known by the physician and one or both of the parents. The author under treatment discussed the preventive and curative measures.

Dr. Carl Wagner, of Chicago, under the head of "Porro Operation," described a modification which consists in reversing the course of the operation. He described a method of controlling hemorrhage; pointed out the indications for the operation, and reported three cases, with recoveries.

Symphyseotomy in Persistent Mentoposterior Face Presentation.—Dr. E. B. Montgomery, of Quinsy, read a paper on this subject and reported a case. The author was unable to find very much literature regarding the use of symphyseotomy in such cases, although all the textbooks on obstetrics express themselves favorable to its performance. He gave an abstract of the report of seven such cases made by Pinard, in 1902, and detailed an account of his own case, which was successful as regards the mother, although the child perished from asphyxia shortly after birth.

Dr. Palmer Findley, of Chicago, spoke of the value of systematic blood examinations in gynecology; while Dr Albert Goldspohn, of Chicago, pointed out the reasons why digital exploration through the internal inguinal rings should be made in conjunction with every Alexander operation.

Dr. Geo. W. Newton, of Chicago, spoke on cystic tumors of the ovary. He discussed the histogenesis, etiology, symptoms, and emphasized the importance of early and correct diagnosis by the citation of illustrative cases. He likewise spoke of the accidents to and changes in ovarian cysts.

Dr. Charles B. Horrell, of Galesburg, described a rather unique case of imperforate hymen in a fairly rugged, rather athletic girl of sixteen years. She was a bicycle rider, etc., and was healthy, one in whom naturally an imperforate hymen would not be suspected, but the patient suddenly exhibited an abdominal tumor the size of a six months' gravid uterus. Examination revealed imperforate hymen, and an incision released about two quarts of grumous black blood, with perfect relief. He said that although this condition is rare, it may occasionally be found.

Dr. E. Wyllys Andrews, of Chicago, exhibited a phantom or model for illustrating herniotomy and suture work on the abdominal parietes. He emphasized the importance of suturing abdominal wounds layer by layer, and pointed out the difficulty of showing all steps of the closure to large audiences. Students get inadequate notions of the real care necessary. Herniotomy can hardly be shown to more than eight or ten observers. He spoke of the value of cloth in layers to imitate abdominal fascia. The parts are almost perfectly reproduced in large size. The author's radical cure for hernia was demonstrated.

Immediate Abdominal Section.—Dr. Denslow Lewis, of Chicago, in a paper with this title, said that the opinion is concurred in that increased facilities for surgical work and the multiplicity of hospitals in country districts often induced practitioners to undertake important abdominal operations without proper qualification or adequate experience. It is conceded that the usual postgraduate instruction may be a means of advertisement for the instructor rather than an honest attempt to teach the student-practitioner the details of operative technic. It is also admitted that many of those in attendance for a few weeks at post-graduate schools only too often seek a superficial knowledge of recent advances, and a respite from their everyday work, and but few are actuated by a sincere desire to add to their actual surgical capability. Nevertheless, it is urged that under certain conditions abdominal section must be undertaken by the practitioner in charge, for without such intervention the patient's life is jeopardized and in some instances the result is inevitably fatal. The principles of asepsis are simple and easily applied anywhere. The author cited cases from his recent experience in ectopic gestation, appendicitis, obstruction of the bowels, and other conditions where the demonstration has been made that immediate operation alone can save life.

Dr. J. N. Stealy, of Freeport, discussed the use and abuse of drainage. The purposes of drainage were set forth, also the indications and advantages, as against the disadvantages and bad results of drainage. The author believes that in the present day the inclination is for less drainage.

Tuberculosis.—In the section on Practice of Medicine, there was a splendid symposium presented on tuberculosis. Dr. George W. Webster, of Chicago, spoke of the mortality of the disease in Illinois for the years 1902 and 1903. Dr. Charles L. Mix, of Chicago, pointed out the factors causing tuberculosis, and aiding its spread. He offered suggestions for its prevention. Dr. Frank Billings, of Chicago, discussed the diagnosis of pulmonary tuberculosis; Dr. Robert B. Preble, of Chicago, the treatment. Dr. Homer M. Thomas, of Chicago, followed with a paper in which he pointed out the annual economic loss to the State of Illinois from this disease. Dr. Harold N. Moyer, of Chicago, discussed the duty of the State in restricting tuberculosis.

In the Section on Surgery there were symposia on eclampsia and carcinoma.

The following officers were elected for the ensuing year: President, Dr. Wm. E. Quine, Chicago; Vice-Presidents, Dr. H. C. Mitchell, Carbondale, and Dr. J. F. Percy, Galesburg; Secretary, Dr. E. W. Weis, Ottawa; Treasurer, Dr. Everett J. Brown, Decatur.

Rock Island was selected as the place for holding the next annual meeting.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, held at the New York Academy of Medicine, June 13, 1904.

The Vice-President, R. E. Van Gieson, M.D., in the Chair.

Clinical and Other Features of the Present Epidemic of Cerebrospinal Meningitis.—The first paper of the evening was read by Dr. Henry W. Berg, on this subject. At all times, he said, the disease is endemic in New York, the average number of deaths from it being, for Manhattan and the Bronx, in late winter and spring, 25 per month and at other seasons sometimes as low as 10 per month. The Health Department reports show that the present epidemic is much more severe than that of 1893, the number of deaths in the boroughs just named having amounted to 306 in the month of May. The disease is now gradually declining. The proportion of fatal cases among older children and adults is very much greater in this than in any other epidemic the statistics of which Dr. Berg has seen. In this, as well as in all other recorded epidemics in this country, a very large increase in the deaths from pneumonia, occurring at the same period, has been observed. This fact is of extreme interest from an etiological standpoint. As is well known, the bacteriological cause of epidemic cerebrospinal meningitis is the *Diplococcus intracellularis meningitidis*, isolated by A. Weichselbaum; and yet, in a publication in 1887, even Weichselbaum conceded that a proportion of the cases of this disease are due bacteriologically to the *Diplococcus pneumoniæ*, the most frequent etiological factor in idiopathic cerebrospinal meningitis also. Whether the Weichselbaum meningococcus is the exclusive cause of all epidemics of cerebrospinal meningitis appears to be still unproven. One of the earliest of Dr. Berg's cases in the present epidemic was one of lobar pneumonia complicated by or complicating cerebrospinal fever. Resolution of the pneumonia occurred after six days, but the cerebrospinal symptoms continued, and the patient, a girl of eighteen years, died at the end of four weeks.

In the epidemic of 1893 and in Councilman's report of the Boston epidemic he could find no history of more than one case in one family, but in the present epidemic in a number of instances he has had two cases in the same family, and in one family there have been as many as three cases. While these cases seem to point to the contagious character of the disease, we know but little of the method of the contagion. It is quite generally conceded that the germ probably enters through the nasal passages and is spread by the lymphatics to the dura and subarachnoid spaces. It is possible, also, that it is carried by the capillaries to the site of the lesion in the brain and spinal cord, although a general infection of the blood (septicemia) does not occur, nor, according to Councilman, has the organism been found in cultures taken from the blood. The meningococcus, however, has been found of feeble growth, and Dr. Berg does not believe this disease to be as contagious, directly or indirectly, as typhoid is, through the stools, or even as pneumonia, through the sputum. The lesion is primarily located in the membranes of the brain and cord, and the involvement of the spinal membranes is much greater and more general than in any other form of meningitis. Along the base of the skull the infection extends to the cranial nerves and the fifth nerve ganglia; it also extends into the spinal nerve roots and spinal nerves, giving rise to symptoms dependent upon inflammation and degenerative changes. Inflammation of the lungs, bronchi, tonsils and middle ear are met with as the result of direct invasion by extension from the nasal cavity and cerebral meninges. The diplococcus can be found wherever the infection extends.

Several Classes of the Epidemic.—In this epidemic the cases he has seen can be divided into three classes: (1) Chronic cases (the most frequent), beginning with acute symptoms, which gradually assume a chronic character, with acute exacerbations. In any one of these exacerbations the patient may die, or the symptoms may again subside. After weeks and even months of illness death may result, or recovery, complete or incomplete, may occur. In some instances there remain more or less complete and permanent disabilities of the eyes or ears, sensory and motor paralyses, or psychical disturbances. (2) Cases (next in frequency) which throughout their course are of an acute character, lasting from one to four weeks and terminating either in death or in recovery, which as a rule is absolute. (3) Fulminating cases, lasting from a few hours to three or four days, which are characterized by most foudroyant symptoms and terminate fatally. The abortive type of cases, lasting for a few hours or a day or two, with recovery, he has not seen, probably because he does not consider the diagnosis confirmed until the diplococcus has been found in the fluid obtained by lumbar puncture. The disease in this epidemic has had no prodromal stage. The acute symptoms have been those of a febrile disease involving the brain and spinal cord: Severe headache, stiffness or even rigidity at the back of the neck, and in most cases in adults, in all in children, vomiting. Pain in the muscles of the back and extremities are also complained of by most of the cases, and hyperesthesia is observed in all except the foudroyant ones. There is generally much trembling, as though from chilliness, and the patient has a tendency to fall into stupor. Ordinarily the temperature is high, but in exceptional instances low. The curve, which has nothing distinctive, is characterized by sudden and extensive variations. The patient early assumes a peculiar position, which is maintained even during delirium and semi-coma. He lies on either side, with the thighs flexed and the abductors spasmodically contractured. The legs are flexed upon the thighs, and the arms, flexed at the elbows, are brought over the front of the chest, while the head is extended backward.

Symptoms.—The symptoms due to inflammation of the brain and medulla and their meninges, and to neuritis of the cranial nerves, are headache, slow pulse, hydrocephalic cry, tache cerebrale, vertigo, convulsions, delirium, coma, coma vigil, Cheyne-Stokes respiration, photophobia, abnormalities of the pupil, ptosis, strabismus, diminished or absent conjunctival reflex, deafness, facial paralysis, hemiplegia, monoplegia, paraplegia, etc. Macewen's symptom is present in advanced cases of coma or semi-coma due to distention of the ventricles of the brain; percussion of the skull one or two inches behind the junction of the frontal, parietal and temporal bones giving rise to a clearer note than is obtained over other parts of the cranium. The joints, particularly the knees, may be affected, the trouble varying from simple pain on motion to all the manifestations present in acute articular rheumatism. That these joint lesions are not toxic but trophic in character was shown by one of Dr. Berg's cases, a child eight months old, in whom a well-marked spinal arthropathy, or Charcot's joint, developed. There soon resulted subluxation of the joint surfaces upon each other, with total destruction of the ends of the bones. This case, so far as he knew, was unique. Absence of patellar reflex is due to increased intraspinal pressure, and affords an indication for a repetition of lumbar puncture. The increased leucocyte count in the blood (18,000 to 30,000) is a valuable symptom, which serves to differentiate these cases from tuberculous meningitis and typhoid fever. The diagnosis may be made absolutely by the finding, by culture, of the meningococcus in cerebrospinal fluid withdrawn by means of lumbar puncture. Kernig's symptom is the most reliable physical sign of the disease which we have, and he has never seen it absent in the present epidemic. It is obtained by placing the patient upon the back, flexing the thigh at right angles with the abdomen, and then extending the leg upon the thigh thus flexed. If Kernig's symptom be present, the complete extension of the leg upon the thigh cannot be accomplished. The patient will cry out, even when semi-comatose, long before the leg is brought to a line with the thigh, and the spasmodic muscular resistance cannot be overcome even by forcible efforts. As the Kernig diminishes, the prognosis improves. This symptom, it should be stated, is not limited to cerebrospinal fever, but is present in other forms of meningitis also. It is generally unequal on the two sides, and sometimes is only unilateral. Very little diagnostic importance should be attached to the Babinski reflex. It is true that in some cases of meningitis the other toes are flexed and the great toe is extended, when the plantar surface of the foot is tickled; but this symptom occurs in some healthy children and in children suffering from other diseases, while it is by no means constant in cerebrospinal meningitis.

Treatment.—Our therapeutic resources in this disease have not kept pace with the advance of our knowledge of symtomatology and pathology. Owing to our incomplete knowledge concerning the source of the contagion and the methods by which it is transmitted, even the prophylactic treatment is uncertain. It has been shown, however, that the meningococcus is one of the most resistant of organisms, retaining its life for a long time; so that as a dust it can readily be carried in the air, and in this way produce infection. Therefore, cleanliness in the sick-room, the careful removal of the discharges from the patient's nose and eyes by cloths or gauze which can be destroyed, the separate boiling of towels, clothing and bed-clothes, and the careful and frequent washing of the hands of attendants and visitors should be employed as safeguards to prevent the immediate carrying of the contagion from the sick to the well or the transmission of an individual contagion through the air. So far as the active therapy is concerned, there is little hope of the production of an anti-meningococcic serum, since it has been found very difficult to produce immunity with cultures of this organism even in the smallest animals. In the Lisbon epidemic Bettencourt and Franca treated their cases by injections of lysol into the spinal canal, with a death rate of only 40 to 45 per cent.; but in Spain the mortality should naturally be smaller than in colder and moister climates. Dr. Berg's usual method of treatment consists of lumbar puncture, repeated whenever, after a period of improvement, the temperature again rises and symptoms of increased intracranial and intraspinal tension occur. If the cerebrospinal fluid flows from the canula in a continuous stream under tension, the withdrawal of 15 to 30 cc. will do much good. Internally he gives sodium iodide in considerable doses: 5 to 10 grains every three hours to a child over a year old, and 15 to 30 grains every three hours to adults. In adults and older children mercurial ointment is rubbed into the back of the neck and spine, and in infants oleate of mercury into the anterior fontanelle. With these methods, together with the treatment of symtomatic indication, 40 per cent. of recoveries may be expected. Ice-bags should be applied to the head, neck, and spine, and if the temperature rises above 103° F. a warm bath is used for five minutes at 80° and five minutes more at 90°. Care should be taken to guard against bed-sores and cleanliness of the conjunctiva and nose will tend to prevent panophthalmitis and deeper infection through the nasal cavities. Plenty of fresh air and sunlight are essential, and if the eyes are affected they should be protected by means of a screen or eye-shade, but, as is the usual custom, by darkening the room.

Abortive Cases.—Dr. Andrew von Grimm said the warm weather has a certain beneficial influence in epidemics of cerebrospinal meningitis, because the hygienic surroundings of the tenement-house population is better then. The period of incubation has been determined as between three and seven days. The infection takes place not only through the nose and mouth, but also the conjunctiva. He has had five abortive cases: in all of them a positive diagnosis was made by the bacteriological finding. In the treatment, sodium salicylate particularly had seemed to be of service. He had never observed any benefit from the use of mercurial ointment or Credé's ointment. In three cases he had tried the plan of producing an abscess by injecting about 15 cc. of oil of turpentine. If there was any disease in which an expectant treatment was justifiable it was certainly this.

The Diplococcus Found in the Blood.—Dr. Henry P. Loomis said he had seen thirty-five cases of the disease at the New York Hospital. In all of them the specific organism was present in the fluid derived from lumbar puncture, and it was interesting to note that in four instances it was demonstrated in the blood by competent bacteriologists. The mortality was very high: 66 per cent. in children and 61 per cent. in adults. The treatment was very disappointing. While lysol injections did no harm, he had not seen any results from it, and there appeared to be nothing in this method which offered any ground for hope. In one case, hopeless at the time, argyrol was injected. The patient died the next day, and at the autopsy evidences if pigmentation all over the brain were found, showing that the drug had circulated freely in the cerebrospinal fluid. He thought the abscess treatment mentioned by Dr. von Grimm might perhaps be attended with good results in some cases.

The Nursing One of the Most Important Points in the Treatment.—Dr. Wm. M. Leszynsky said it had been contended by many that when lysol was employed it never got beyond the site of the injection. He was therefore very glad to hear of the last case mentioned by Dr. Loomis, as it showed conclusively that substances thus injected do reach the various parts of the cerebrospinal tract. In the case of one child he had injected a one per cent. solution of lysol, and it was the only instance of complete recovery among the cases which he had at the time. From this one case, however, he would not draw any conclusion as to the benefit of this agent in general. It seemed to him that one of the most important things was the nursing, and in hospital practice it was very difficult to secure adequate attention to this. Even the chronic cases required the same care as typhoid fever patients. Kernig's symptom was found in all the cases; it is merely a confirmatory sign. One thing he could not understand, the attitude of some toward lumbar puncture; they contended that it was of no benefit. The procedure, when properly performed, is entirely harmless, and it is certainly of great diagnostic value at least. In hospital practice he thought it should be done in every case. He had not seen a petechial eruption in any instance, nor had he met with a single case of the fulminating type. In one case, however, the diplococcus was found after death in a patient who had suffered from intermittent trismus, but had no opisthotonos or rigidity of the neck.

Dr. Van Gieson read a paper on Infant Feeding.

Cow's Milk for Infant Feeding.—Dr. Augustus Caillé read a paper on this subject. In our attempts at the modification of cow's milk we are guided, he said, by the following fundamental considerations: (1) Reduce the proportion of proteids by dilution. (2) Increase the quantity of fat, originally sufficient but reduced by the necessary dilution. (3) Increase the sugar and salt, likewise made sufficient in amount by the dilution. (4) Sterilize or pasteurize in warm weather and for special cases. Milk food ordered by prescription according to the percentage method and supplied by the laboratory has given him very excellent results, but the same gratifying results he has obtained from home modification by simple dilutions of top milk. For various reasons the modifications of cow's milk, whether made in the household or in the laboratory, will not give uniformly good results, no matter how accurate we may be in our manipulation of percentages. We cannot convert cow's milk into mother's milk, however scientific we are; we are obliged to use cow's milk as nature furnishes it to us. With proper hygienic management, however, clean cow's milk, properly diluted or modified, will suit the vast majority of bottle-fed infants, provided they are not over-fed. The following simple method of home modification has been practiced by Dr. Caillé for the past twenty years: If a quart bottle of average good milk stands for four hours the upper half of the milk will contain about twice as much fat as the milk before standing. This point of so-called top milk is decanted and forms the basis of bottle food for home modification. By diluting this top milk in various proportions we obtain a food of various strengths as regards fat and proteids. The deficiency of salt and sugar is readily made up by the addition of these substances, and a food is thus prepared which will vary in composition according to the requirements of the child to be fed. Schedules were given for the feeding of infants of different ages.

In a difficult feeding case cow's milk should be discontinued for a short time, and cereal decoction and white of egg substituted. In resuming cow's milk we begin with a low strength, and gradually work up to full strength milk, care being taken to avoid overfeeding. Digestion is best stimulated by carrying children out of doors, and not by drugging. An idiosyncrasy for cow's milk in proper dilution should not be suspected until after the child has had proper hygienic management. Infants and children who are kept indoors in cool and cold weather, and compelled to breathe the air of overheated and stuffy living apartments, will not digest well, no matter what they feed on. Idiosyncrasy for cow's milk is managed by selecting some substitute food, if possible the breast of a wet-nurse. In some cases whey with cream and cereal decoction will answer.

A Simple Plan of Home Modification.—Dr. H. D. Chapin thought the biological question quite as important, if not more important, than the chemical. In the plan which Dr. Chapin has adopted a constant ratio between the fats and proteids is maintained. In a bottle of milk which has been allowed to stand for six hours in a cool place we find three layers. In the first (of 9 ounces) the ratio is 3:1, in the second (of 16 ounces), 2:1, and in the third (of 20 ounces), 1½:1. In order to get a combination of the three layers a dipper is employed which holds just one ounce. Unless the method directed for home modification of milk is simple it will not be carried out. By watching the stools such alterations can be made as may be indicated. His experiments did not agree with those of White, for he found that a dextrinized gruel makes a better diluent than the plain cereal. We know that young infants can digest a small amount of starch, but it is not beneficial for them to do so.

The Work of the Chemist Not Sufficiently Appreciated.—Dr. E. H. Bartley said that as long as there were babies this subject would give us difficulty. He thought it often the case that the chemist was not given his just due. Such a discussion as this was brought about by the fact that the chemist in the laboratory had demonstrated that the caseins are different, and has shown how to get rid of the violent effects of the paracasein or pseudonuclein. If we are to make progress the careful chemical study of cow's milk is requisite. No chemist ever intends the method he recommends to be the only one. It is recognized that idiosyncrasies exist which will prevent any one kind of food from being invariably satisfactory.

Dr. Charles G. Kerley said it was universally recognized that cow's milk must be used as a basis in substitute feeding. While no one plan of preparing it would suit all babies, he thought we could arrive at one which would be satisfactory for the majority. He would like to say a word in favor of the laboratory. Whenever it was possible he always ordered laboratory modified milk, and this was his practice among the better class of his patients. In a second class of cases he used split milks. In a third class of cases, infants in institutions, the digestive condition had to be taken into careful consideration. In children with digestive weakness careful attention should be paid to the condition of the stomach, and not infrequently the greatest possible benefit could be derived from daily washing out this organ. Fresh air was essential.

The Essentials of Successful Artificial Feeding.—Dr. Theron W. Kilmer said that among the higher classes of women the nursing of infants at the breast was much less common than among their humbler sisters. The reasons for this he thought were (1) alcoholism, and (2) the strained and rapid mode of life. The successful practitioner is the physician who knows how to feed babies successfully. To secure success he mut pay special attention to three things: (1) The milk used, (2) the baby's stomach, and (3) the nursing bottle. As to nursing bottles, it is often assumed that

they are kept clean, when as a fact they certainly are not, and too much stress could not be laid upon the importance of this point.

ASSOCIATED PHYSICIANS OF LONG ISLAND.

Nineteenth Regular Tri-yearly Meeting, held June 18, 1904, at Central Islip, Long Island.

The President, James P. Warbasse, M.D., in the Chair.

The Care of the Infant.—Dr. Henry P. de Forest emphasized the importance of being fully prepared for the various accidents that might await the new-born infant. The following things should be in readiness: A bathtub partly filled with hot water (the household bathtub, if near, will suffice); two pairs of artery forceps, a curved needle with heavy silk, a tenaculum for baby's tongue, a gauze pad for insufflation. The mouth should be cleansed as soon as the head is over the perineum; this may prevent asphyxia from meconium, mucus or regurgitated blood.

Cord Around the Neck.—Formerly the current practice has been to exert every effort to disengage the cord, as soon as its pressure is seen or felt around the neck. The rule should rather be to remove it if this can be done quickly and easily. If the least difficulty is experienced, proceed at once to complete delivery, for children have been lost owing to delay in trying to remove the cord. Occasionally it is easy to slip the cord over the shoulders. If the cord is too short, in this case interfering with delivery, there is the danger of loosening of the placenta, with internal hemorrhage. By then clamping the cord with two artery clamps the cord may be cut between them.

Asphyxia.—The two most important points in the treatment of this condition are to clear the air-passages of mucus and to stimulate the child with heat and artificial respiration. The former may be accomplished by wiping the mouth and then resorting to insufflation of the mouth and nose. Artificial respiration may be performed while the child is in the bath of hot water, an attendant applying cold water to the chest and spine, and may be aided by rhythmic traction on the tongue. The alternation of hot and cold bath is not as good as the hot bath and artificial respiration. If not relieved by this, the child cannot be saved at all.

Atelectasis.—This may result from the acclusion of the bronchial tubes with mucus. It should not be confounded with bronchopneumonia resulting from the inhalation of mucus, milk or blood. Cyanosis is a more or less prominent but a later symptom. The treatment is heat and food.

Cephalhematoma.—If small, let child lie on side of head opposite to the swelling. If large, the head should be wrapped in a bonnet well padded with cotton. A favorable prognosis should be given, the tumor disappearing in three or four weeks. Absent treatment is the best. Hematoma of the sternocleidomastoid muscle may result from excessive traction on the head. Facial paralysis may interfere with feeding, in which case the child should be fed with the spoon or bottle. In the care of the eyes, silver nitrate has been found to be preferable to protargol. The supposed inability to nurse is frequently due to tongue-tie. The nurse should be instructed how to "blow baby's nose." As a dressing for cord, equal parts of zinc oxide and salicylic acid are efficient. It is preferable to omit the bath until the cord has fallen off, owing to danger of infection of the latter. Some children are stimulated by the bath and some are depressed; if the latter, the bath should be hotter. For tender nipples use a shield and recommend less frequent nursing. The application of comp. tinct. benzoin with a subsequent dressing of boiled sweet oil is efficient.

The discussion of Dr. de Forest's paper was opened by Dr. Harrigan, who urged the necessity of keeping the possibility of tetanus infection in mind, a condition which occurred twice in the speaker's practice. He also alluded to the importance of changing the child's position frequently, particularly at the breast, and cited instances of deformity resulting from incorrect posture having been mistaken for rickets.

Dr. Alfred Bell took issue with Dr. de Forest over the statement of the latter that if the infant's mouth is cleansed with boric acid before and after nursing it will never get sprue or stomatitis. He referred to instances in which these conditions occurred in spite of the most scrupulous care in the toilet of the infant's mouth. The care of the foreskin in the male infant is a very important point; all that is necessary is gentle separation with a small retractor. The speaker also alluded to the general apathy of the profession with regard to certified milk, in which only 30,000 bacteria per c.c. are allowed. The milk is fully worth twice as much as the price, 12 cents per quart, that is charged for it.

Dr. Kerr spoke of two points that make for the welfare of the child during the dawn of its life. It is sometimes heard that the child rebels against its natural food. This condition does not exist. The fault is excessive handling of the child, resulting in pressure over the stomach and bowel. The child should be rolled gently on the lap of the nurse in being dressed. The second point is that the ordinary pillow, becoming saturated with perspiration and milk which the infant occasionally regurgitates, becomes a good culture-medium for bacteria. In lieu of the ordinary pillow, a jute pillow should be used; the jute should be changed every day, as well as the slip. The expense of the jute is so slight that the very poor can afford it.

Dr. Chase said that it is undesirable to bathe the weakly child every day. A sponge bath with borax water is fully as efficient as the complete immersion.

Causes of Death Among Aboriginal Peoples.—Dr. F. C. Cook, the well-known Arctic and Antartic explorer, read an interesting paper on the above topic. It was contrary to the author's experience that alcoholism is the main cause of the extinction of the natives of this continent. One of the most potent causes that brings destruction to these people is the introduction of the various children's diseases by the white explorers and settlers, the adult, no less than the infant, population falling a ready prey to measles, scarlet fever and the like, which diseases break out with a virulence far greater than is seen among civilized people. The author explained this fact by suggesting that civilized races among whom the various infectious diseases raged with virulence in remote centuries, have inherited a passive immunity, while the savage, to whom these diseases are new, is not endowed with this immunity. Another disease which has proved destructive to the red man is tuberculosis. The causes of this increased susceptibility to consumption are found in the alteration of the mode of life of the Indians, the aggregations in villages, with crowding in unsanitary houses, with, in general, a tendency to degeneration rather than to uplifting. The substantial log house of the missionary settlement, with the probability of microbic multiplication from filth and sputum, is but a poor substitute for the wigwam in the native hunting ground. The author alluded to a virulent and fatal epidemic of parotitis among the natives of Alaska last year. To the Indian no blow is so hard as an acute infectious disease, to which he has not yet adapted himself. In 1896, an epidemic of measles occurred among the natives of Greenland with a mortality of 40 per cent.

Dr. Jas. P. Warbasse commented on that phase of

the subject which deals with the inherited immunities of civilized races, and suggested as an additional example of the latter the fact that the temperate nations of to-day passed through an era of intemperance during the early days of their history, as the result of which experience they have acquired a partial passive immunity against alcoholism.

Intestinal Antisepsis with Special Reference to Benzoyl-Acetyl Peroxide (Acetozone).—Dr. William H. Ross, of Brentwood, gave the results of his experience with this new intestinal antiseptic, particularly in typhoid fever cases, during the past year. It is an ancient fallacy that typhoid should be allowed to run its course. Discovered by Novy and Freel, of Ann Arbor, acetozone is a member of the large group of peroxides, possessing a greater germicidal power and a greater power of given-up oxygen. Biologically it is inert, but on taking up water it develops its power. It produces no constitutional effects and no poisonous effects, even in large quantities. It is germicidal in the strength of 1-33,000. The author used it in cases of purulent infection and gastro-intestinal fermentation and in thirteen cases of typhoid fever. In twenty-four hours 30 to 40 ounces of the saturated solution may be given, prepared by dissolving 15 grains in a quart of water, which is allowed to stand for two hours for hydrolysis to begin; it is then placed on ice. The taste may be veiled by means of lemon juice. The drug produces increased diuresis and a greater elimination of hippuric acid. The administration of salines enhance its value. The average amount of acetozone used in the author's typhoid cases was 210 grains. Its use was followed by an amelioration of symptoms. Two or three of the cases that were given up as hopeless by several physicians recovered after the use of this drug. The temperature fell in one or two days after its administration began, the stools improved, dryness of the tongue disappeared. In fact, in the previous three or four series of 13 cases, each of typhoid, treated by the speaker in former years, was the mortality less than 20 per cent. In the last series the mortality was nil, although some of the the cases were considered hopeless. The author admitted that 13 cases are insufficient to establish the value of a drug, but believed that his own experience, taken in conjunction with that of numerous other experimenters, furnish a very encouraging outlook in the the therapeusis of typhoid fever. The time for the purely expectant treatment has been outlived.

Dr. Leon Louria, in discussing the above paper, expressed strong doubts as to the efficacy of intestinal antisepsis. Osler in the last edition of his text-book has admitted the failure of this plan of treatment in typhoid fever. Bouchard, in the early '80's, was the first to attribute to intestinal auto-intoxication a rôle in the production of morbid conditions. Rossbach introduced this theory in Germany. Miller and Brieger state that, although the facts of anti-intoxication are beyond doubt, the bacteria are not alone responsible. The ethereal sulphates have not been recognized as criteria of intestinal auto-intoxication by German chemists. The clinical picture of this supposed poisoning with bacterial toxins may include vertigo, tetany with dilatation of the stomach, palpitation of the heart and urticaria, all of which are manifestations of conditions other than auto-intoxication. Moreover, these symptoms appear more frequently in women and children. Many of the symptoms of so-called intestinal auto-intoxication are of reflex origin. Many years ago Beaumont produced vertigo in the case of the Canadian trapper by touching the mucous membrane of the stomach. In this connection may be mentioned the large class of cases of idiosyncrasy to articles of food, *e.g.*, strawberries. The physiologist Ludwig is quoted to have said to his physician: "The intestines have a brain of their own, which is different in different individuals." In regard to the new intestinal antiseptics, there is more to be feared from the commercial invasion than from the bacterial one. The good results obtained by the author of the paper, Dr. Louria attributed to the large amount of water (two qts.), which the patients were compelled to drink daily. In order to diminish the odor of the stools, large enemata are far more effective than intestinal antiseptics.

BRITISH MEDICAL ASSOCIATION.[1]

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

(Continued from Page 480.)

Trypanosomiasis.—An extended discussion on this subject was held. Dr. David Bruce, in opening the discussion, reverted to the conclusions arrived at at the last meeting of the Association. These were: (1) That the trypanosome found in the blood of natives on the West Coast of Africa was different from that found in cases of sleeping sickness, and that, therefore, human trypanosomiasis and sleeping sickness were distinct diseases. (2) At this time last year it was considered that the native is immune to trypanosomiasis, but that the European is not, this conclusion being arrived at on the analogy of the wild and domestic animals and nagana. (3) A year ago it was held that the prognosis of trypanosomiasis in the native was apparently good; in the European it was not favorable, but certainly not necessarily bad. (4) At that time it was stated that the treatment of this disease so far had proved absolutely unsuccessful. (5) Another conclusion that was arrived at this time last year was that the trypanosome of sleeping sickness had other hosts in addition to man, and that the humbler mammals had probably a great deal to do with the endemicity of trypanosomiasis.

He thought that a great advance in knowledge of this subject had been gained during the last year. Only one of the conclusions laid down at the last meeting of this Association can now be considered to be correct. Of the propositions laid down at this meeting last year, about 80 per cent. of them are now shown to be incorrect. He hoped that this year's conclusions would not show a high rate of mortality.

The first proposition he laid down was that the trypanosoma found in the blood of natives on the West Coast of Africa and in Uganda, and those found in cases of sleeping sickness, are identical. The work on this subject has been mainly done by Laveran and Mesnil, by Dr. Thomas, of the Liverpool School of Tropical Medicine, and by the Royal Society Commission in Uganda. All have come to the conclusion that, morphologically, these trypanosomes could not be said to differ, and that their behavior when injected into various animals, was also identical. From these considerations, therefore, it is thought that the *Trypanosoma gambiense* (Dutton), found in the blood of natives in West Africa and the trypanosome found in sleeping sickness, are identical.

Trypanosoma Fever.—2. The next proposition laid down was that the so-called "trypanosoma fever" is nothing but the first stage of sleeping sickness. The chief proof of this is that several of the natives found with trypanosomes in their blood a year ago in Uganda, who appeared perfectly healthy and were going about their ordinary work without showing any symptoms of sleeping sickness, have now succumbed, or show decided

1 From advance sheets of the *British Medical Journal*, by courtesy of the editors.

symptoms of that disease. Captain Greig, of the Indian Medical Service, and Lieutenant Gray, Royal Army Medical Corps, who are still working at sleeping sickness in Uganda, have again examined as many of these natives as possible, and have found that many of them have died of sleeping sickness. Again, there were in Entebbe some five natives with trypanosomes in their blood who were kept under close observation. One of these natives is now suffering from unmistakable symptoms of sleeping sickness. From these facts, therefore, it is inferred that the so-called "trypanosoma fever" is nothing but the first stage of sleeping sickness.

Europeans Not Immune.—3. The next proposition is that neither the native nor the European is immune to this disease. If it is true that human trypanosomiasis and sleeping sickness are identical diseases, then this argument need not be pushed, as all are aware that very many thousands of natives have succumbed to sleeping sickness during the last few years. A short time ago it was also asserted that the European was immune to sleeping sickness; this, of course, like many another loose statement of the same kind, is now proved to be wrong, as several cases of this disease have occurred among Europeans.

Mortality 100 Per Cent.—4. The next proposition is that as regards prognosis, instead of being favorable, the mortality is 100 per cent. in both colored and uncolored races; at the same time it may be proved later that some of the natives—at least a certain percentage of them—who have trypanosomes in their blood, may kill off these trypanosomes before the disease has given rise to the pathological changes which constitute sleeping sickness. Greig and Gray in Uganda will have an opportunity of putting this to the proof, when they have examined all the natives examined for trypanosomes at this time last year. In his opinion, however, he doubted very much if man ever kills off the trypanosome when once it has gained entrance to the circulation. The incubation period may last for years, but he thought in all probability it will be found sooner or later that the man dies of the infection.

Lower Animals Immune.—5. The next proposition was that up to the present no evidence has been brought forward to show that any of the lower animals take any important part in the spread of human trypanosomiasis. This is a point upon which in all probability more light will be thrown within the next few years. There is no evidence, at present, that any of the lower animals take any part in the spread of the disease. It is quite true that many mammals besides man are capable of being infected artificially by this disease, and it is quite possible that this infection may take place sometimes under natural conditions, but when one thinks of the enormous number of infected natives in the sleeping sickness area, it is evident that there is no need to call in the aid of any of the lower animals to assist in the spread of the disease. Statements have been made that perhaps the trypanosomes live in the blood of fresh-water fish in the Victoria Nyanza. These fish are supposed to lie on the surface of the water, and some blood-sucking insect conveys the trypanosomes from the fish to the human subject. Others speculated in the same way as to the crocodile—which is very numerous in Lake Victoria—playing a part in the dissemination of this disease. These are most ridiculous speculations, and are not worth a moment's consideration.

A Fly the Infecting Agent.—6. The next proposition is that human trypanosomiasis is conveyed from the sick to the healthy by means of a biting fly—the *Glossina palpalis*. No evidence is as yet forthcoming from the West Coast of Africa in regard to the truth of this statement. He believes, on the West Coast, Dutton and others have found it impossible, up to the present time, to prove that there is any connection with the spread of this disease and the *Glossina palpalis*, but he thought the evidence brought forward in Uganda is overwhelming in this respect. The distribution of this disease was found to be most peculiar. Shortly, the disease was confined to a narrow strip of land running along the shore of the lake and to the many islands which dot the northern part of the lake. It was thought that this peculiar distribution must depend upon some peculiar factor, and that factor was found in the *Glossina palpalis*. The distribution of this fly and the distribution of sleeping sickness was found to be identical; where none of these flies existed there was no sleeping sickness. The evidence, then, in Uganda, was so strong that he had no hesitation in asserting that sleeping sickness was conveyed, at least in Uganda, by that species of tsetse fly known as *Glossina palpalis*.

7. It has, however, been proved that several members of this genus are also able to convey the virus from the sick to the healthy, and this constitutes a danger that this disease may spread into the British East African and other tsetse fly zones. The proof of the truth of this has been brought forward by Dr. Wiggins, of Nairobi, in British East Africa, who experimented with the three species of tsetse flies found in that locality. *Glossina palpalis* is not only able to convey the trypanosome of sleeping sickness from the sick to the healthy, but it is also able to convey the trypanosome of nagana, or a disease found in part of Uganda, which must be very closely related to nagana. If the *Glossina palpalis*, then, can carry more than one species of trypanosome, it is reasonable to believe that the other species of this genus will also be able to carry the infection of sleeping sickness. This then constitutes a real danger that this disease may become imported into British East Africa and spread southward and northward along the tsetse fly belts of the coast and large river valleys.

8. Although there is proof that the various species of the genus *Glossina* can convey this trypanosome, there is no proof that other genera of biting flies, such as *Stomoxys and Tabanus* carry the infection under natural conditions. The arguments for the proof of this proposition are that Nuttall, of Cambridge, who experimented on the conveyance of the nagana trypanosome from sick to healthy animals by means of *Stomoxys calcitrans*, always had negative results. Greig and Gray have tried this experiment in Uganda, with *Stomoxys*, and have also failed. Experiments on a huge scale have been going on in South Africa for many years in regard to the spread of nagana or the tsetse fly disease; it is only where the tsetse fly, *Glossina morsitans*, or one of its allied species, *Glossina palipides*, is found that this disease occurs. Outside that area there may be many other species of biting flies, but the disease never spreads beyond the zone of the tsetse fly. When in Africa he lived for two years on the top of a hill in Zululand, within a few miles of the fly country. He had many animals affected by tsetse fly disease living on the top of this hill and surrounded by healthy animals, but in no case was the disease conveyed from one of these sick animals to a healthy one, although there were numerous species of biting flies, other than the tsetse fly, to be found on the top of the hill. It has been said by Rogers that *Tabanus* can carry the trypanosome of surra; this may be true, but he must say that he had not been quite convinced that this experiment was carried out under the best conditions. It seems evident, if one places two animals beside each other, one affected with surra and the other healthy, if one proceeded to shave the skin of both these animals, thereby causing a great deal of excoriation of epidermis and the infliction of

small wounds; if one then takes a cage containing *Tabanidæ*, and allows them to bite the affected animal, and while so biting to suddenly have the cage transferred to the healthy one, is, to his mind, not a fair experiment; it stands to reason that any kind of biting fly would under these circumstances convey the infection to the small wounds and excoriated places which have been caused by the shaving.

Direct Infection.—9. There is no proof that *Trypanosoma gambiense* passes through any metamorphosis in *Glossina palpalis*, but that the transference of the parasites by this fly from one animal to another is purely mechanical. It has been said that the trypanosome undergoes a metamorphosis in the interior of the tsetse fly analagous to the metamorphosis which the malarial parasite passes through in the mosquito. The arguments in favor of the trypanosome being conveyed by the tsetse fly without any metamorphosis are: First, the fact that the fly is not able to retain, or does not retain, its infective quality for more than forty-eight hours. No one has been able to infect a healthy animal by means of the tsetse fly for a longer period than forty-eight hours, and his many attempts to convey the disease by means of the tsetse fly, three days after the fly had fed on trypanosoma blood, had always failed. If any metamorphosis analogous to that which the malarial parasite undergoes in the mosquito was undergone by the trypanosome in the tsetse fly, then it would be expected that the tsetse fly would not become infective until some time had elapsed from the last time of feeding; the mosquito in yellow fever does not become infected for some twelve days, and in the same way the mosquito in malaria takes some days before it becomes infected. After the work of Schaudinn on *Halteridium*, it would be rash to say that no metamorphosis or development takes place in the interior of the tsetse fly. In all probability some development does take place, but he asserted that this development will be found to be quite a different thing from the metamorphosis which has been prophesied, and which takes place in the case of the malarial parasite and the mosquito.

10. The present evidence goes to show that all the stages of the development of the *Trypanosoma gambiense* take place in the human host.

11. In regard to measures for the prevention of the spread of sleeping sickness: These should aim at preventing, as far as possible, the movement of natives from sleeping sickness areas into any part of the country where any species of tsetse fly is found. It was lately proposed to remove the Indian laborers from the British East African Railway and to replace them by native laborers from Uganda. One can easily imagine how dangerous such a course might be. Many of these Uganda natives might have the trypanosomes of sleeping sickness in their blood, and so convey that parasite into the tsetse fly district of British East Africa, and spread the disease to the natives of that part. Other measures would be the prevention, as far as possible, of the movement of healthy natives into sleeping sickness areas; the evacuation, if possible, of those areas; the destruction of the breeding places of the tsetse fly, and of the fly itself, whenever possible.

(To be Continued.)

Surgical Treatment of Chronic Bright's from the Ophthalmic Standpoint.—It has for some time been a recognized fact that patients, who suffer from chronic nephritis and show changes in the retina resulting from that disease, seldom live longer than two years. This ocular lesion, therefore, at once becomes a very important prognostic factor and it seems strange that surgeons contemplating the operation of decapsulation should so frequently fail to even look for this sign. G. F. Suker (*N. Y. Med. Jour.*, June 4, 1904) has carefully examined all the clinical data obtainable and finds that only 16 cases of decapsulation have occurred upon patients, undoubtedly suffering from albuminuric retinitis. These changes in the retina are simply evidences of irreparable inflammatory changes occurring not only in the eye but also in the kidney and throughout the cardiovascular system. Of these 16 cases not one lived two years, and the majority lived less than six months. It would seem proper, therefore, to say that the presence of retinitis contraindicates the operation of decapsulation. Since this ocular complication occurs in at least 25 per cent. of all cases of chronic Bright's disease, it is a sign which should always be looked for before such an operation is advised.

BOOK REVIEWS.

Surgical Differentials. By J. W. Draper Maury, M.D., Rockefeller Institute Research; Fellow in the Laboratory of Experimental Surgery, Columbia University, New York. Illustrated. James T. Dougherty, New York.

There are three distinctive characteristics to this little book: Differential tables, unique illustrations and an up-to-date, terse text.

Differential diagnosis has always been a difficult subject for every one. A volume which presents a long series of differentials in tabular form must therefore be useful. When, in addition, the tables are thoroughly correlated with the rest of the book, and all is made to follow a logical scheme, it becomes doubly valuable, for recitation purposes.

A book written to fill the vacancy for which this one has been designed is a distinct step in advance, when it places into the hands of students graphic "line sketches," made by one of themselves and so simple that any one can reproduce them.

The text is as clear as the illustrations, and reflects the most recent surgical advances, some of which have not yet found their way into general surgeries. The author strives to render his pages of value, particularly to the student who is preparing to take the competitive examinations for the hospitals. To this end he has, in addition, appended a list of the examinations for 1902 and 1904, at all the important hospitals in and near New York.

The book is well designed and in every respect a credit both to its author and publisher.

A Text-Book of Mechano-therapy. (Massage and Medical Gymnastics.) By Axel V. Grafstrom, B.S., M.D. Second Edition, revised and enlarged. W. B. Saunders & Company, Philadelphia, New York and London.

This popular little work appears in its second edition with two new chapters added, one on massage of the eye, ear, nose, and throat, and the other on pelvic massage. The aim of the author has been to make the work a rational text-book for the medical student, the trained nurse, and the medical gymnast, and also a reference work on the subject for the physician. The system practised by the Royal Gymnastic Institute in Stockholm, Sweden, has been principally followed, with such modifications as are recommended by other authorities. The book is simply, but quite completely illustrated. The increasing importance of this subject, makes this little work a valuable addition to the physician's armamentarium.

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ORIGINAL ARTICLES.

POLYURIA IN TYPHOID FEVER.[1]

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AND
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MURCHISON, in his chapter on typhoid fever, says the quantity of urine during the first week or ten days is usually diminished. Sometimes it falls to one-half, to one-quarter, or even to one-sixth of the normal standard, notwithstanding the increase of fluid ingesta. After the second week the quantity increases, and he has frequently observed the urine to be copious, pale and of low specific gravity, before the cessation of the fever. But in most cases the quantity does not increase greatly until convalescence, when the urine is almost invariably copious and of low specific gravity. At this period he has repeatedly known as many as eighty or ninety fluid ounces passed in the twenty-four hours.

Arnould, in *Dictionaire des Sciences Medicales*, says the quantity of urine is almost always diminished, sometimes it is more abundant, and there may be a veritable polyuria; this may be a symptom preceding the defervescence. During convalescence the urine may vary between 1,500 c.c. in moderate forms of fever, and 1,700 c.c. in severe forms; this polyuria coincides with the more abundant excretion of the solid material of the urine. There is intimate relation between the function of the kidneys and the skin. When the patient is convalescent the polyuria corresponds with the abundant sweats; on the contrary, a dry skin and diminution of the urine is a grave sign.

One of the latest expressions on this subject is by Olser, who says: "An unusual increase of urine during the progress of convalescence is by no means a rare manifestation, so that the amount may reach 10,000 c.c. and more, in twenty-four hours. The urine is then remarkably light, as clear as water, and of exceedingly low specific gravity down to 1,002. Rarely, and then especially in nervous persons, women as well as men, this polyuria may be apparent as early as the latter portion of the febrile period."

Practically all authors of text-books are satisfied with the remark that the urine is scanty and of high specific gravity during the height of the fever, and more abundant, and of lower specific gravity toward and during convalescence. Some authors say that a convalescence can be practically foretold by an increase in the amount of urine of low specific gravity.

Under the caption, "Polyuria in Typhoid Fever," we could discover only one article, though isolated cases have been reported and not published. Dr. J. C. Wilson, of Philadelphia, reported a case of polyuria in typhoid fever at the Section of Medicine of the College of Physicians of Philadelphia, and will speak of his case in connection with this paper.

Spitz reported in 1882, under the caption, "Polyuria in Typhoid Fever," a case in a patient who had a severe attack of typhoid, who passed 6,000 to 8,000 c.c. of urine daily during convalescence. After this observation he had the daily amount of urine of all cases of typhoid fever measured, and it was found that in about one-half of the cases, polyuria was present in convalescence, he considering anything over 2,000 c.c. as a polyuria. The urine was always bright yellow, free from albumin and sugar and without any sediment; it was of low specific gravity, so that it consisted mainly of water.

He concludes: (1) In convalescence of typhoid fever polyuria is present in one-half of the cases; (2) the amount of urine may be increased by artificial means during severe high temperatures; (3) the increase of the amount of urine is most common in the sixth week; (4) the increase in the amount of urine is not due to any organic disease.

The case which we desire to report is as follows:

Case.—Charles S., married, aged forty years, admitted to St. Timothy's Hospital April 15, 1903, on about the eighth day of typhoid fever. The temperatures on admission was 103° F. It remained between 102° and 103° F. until May 4, when convalescence began.

On May 8 the temperature was normal and remained so until his discharge from the hospital. He was extremely nervous through the entire course of the disease. On April 23, eight days after admission, he had a slight intestinal hemorrhage which had apparently no effect on the course of the disease. He was taking five grains of salol every three hours on admission, and continued this drug until April 19 (four days), when it was stopped. The first twenty-four hours after admission he passed about 1,200 c.c. of urine. The second twenty-four hours he passed about the same amount. On April 18, or the third day after admission, he passed seven quarts and nine ounces (7,000 c.c.). The next day, seven quarts and eighteen ounces (7,200 c.c.). During this period he was nervous, but not so markedly as later, when he was passing much less urine; he was extremely thirsty, and drank water every

[1] Read before the Association of American Physicians, Washington, D. C., May 10, 1904.

few minutes, and passed his urine at very short intervals, in amounts varying from ten to twelve ounces. At this time the polyuria amounted to a veritable complication, on account of the loss of rest and the nervous excitement which it entailed. His skin was dry, and he was restless. He drank much water after the polyuria began. It was not measured. As the polyuria diminished the thirst became less marked; the increased consumption of water appeared to be the result, rather than the cause of the polyuria.

On the following day (April 20), the urine dropped to about four quarts, and remained between three and four quarts (3,000 to 4,000 c.c.) for two days. In the next ten days he passed between two and three quarts in twenty-four hours, and passed about the normal amount on May 13, or almost one month after his admission to the hospital. During this period, April 15 until May 6, his temperature ranged between 104° three quarts the specific gravity rose to 1,010, and remained at about 1,010 until convalescence was fully established. At no time was there any albumin or sugar or at any time were there any formed elements. On April 11, 1904, one year after the typhoid fever, an examination of the urine was made and it was found to be absolutely normal. He is in perfect health. On three days, April 23, 24, 25, 1904, he passed respectively, 41½, 41¾ and 43½ fluid ounces of urine. On April 26, 27, 1904 (that is, just one year after his attack), he was given five grains of salol every three hours, and passed on each day 54 ounces and 52 ounces respectively, specific gravity 1,026—otherwise negative, containing 2 per cent. urea.

On reviewing this case it will be seen that it differs from practically all of the cases of polyuria in typhoid fever mentioned by writers, in the fact that the polyuria began suddenly in the second week of the disease, and that the urine was

Fig. 1.

The dotted line represents the amount of urine, the solid line the temperature of patient.

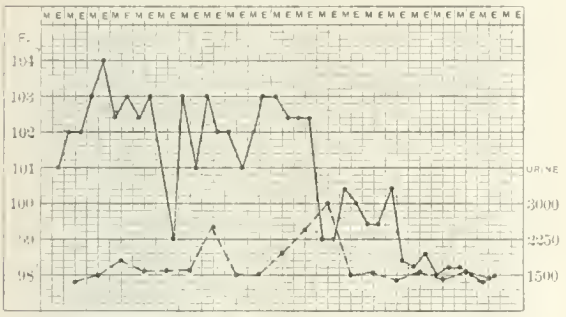
F., and normal, but during the greater part of the period was not below 102° F., except as the result of sponges. From May 6 to 14, when his temperature was normal, he passed between two and three quarts of urine daily.

It will be seen, then, Fig. 1, that during the height of the fever he had a veritable polyuria, and as the temperature reached normal he passed decidedly *less* urine. When his polyuria was most extreme the urine had a specific gravity of 1,002. On the first day it contained a trace of salicylic acid, as shown by the iron test, but only on that day; it contained neither albumin nor sugar, no acetone, and no diacetic acid, there was .004 grams of urea, to 1 c.c. of urine, or 4 per cent. He thus passed 28.8 grams of urea, which is not far from normal. As the specific gravity rose and the quantity of urea decreased, the urea percentage rose; he thus at all times passed about a normal percentage of urea. When the amount of his urine fell to greatest in amount during the height of the fever, and declined as convalescence began, and when convalescence was established the urine was absolutely normal in quantity and in character.

The polyuria spoken of by authors occurs just before, or during convalescence. In order to compare the amount of urine passed in this case with the amount passed in the ordinary case of typhoid, we have selected two cases of typhoid in which the urine was measured daily. In the patient (Ed. Dowling), chart 3, where daily measurement was made for four weeks, the urine never rose above 62 ounces in the twenty-four hours, and was often as low as twelve ounces. In only one other patient beside the one quoted in this series of 180 cases was there any excessive amount of urine passed during the height of the fever, and in that case it did not rise above 3,000 c.c., chart 2, in twenty-four hours. The amounts passed in this case will be seen by the chart, together with the range of temperature.

We have gone over the records of a series of cases in St. Timothy's Hospital with a view of proving the frequency with which polyuria occurred during the course, or in the convalescence of typhoid fever, and in 180 cases in which the urine was measured every day, we have discovered only 22 in which the urine was 2,000 c.c. or over, and in only one of these, the one above reported, was the polyuria constant from the beginning of the disease, and in no other case except this was there a very excessive amount, 3,000 c.c. being the limit.

Fig. 2.



The dotted line represents the amount of urine, the solid line the temperature of patient.

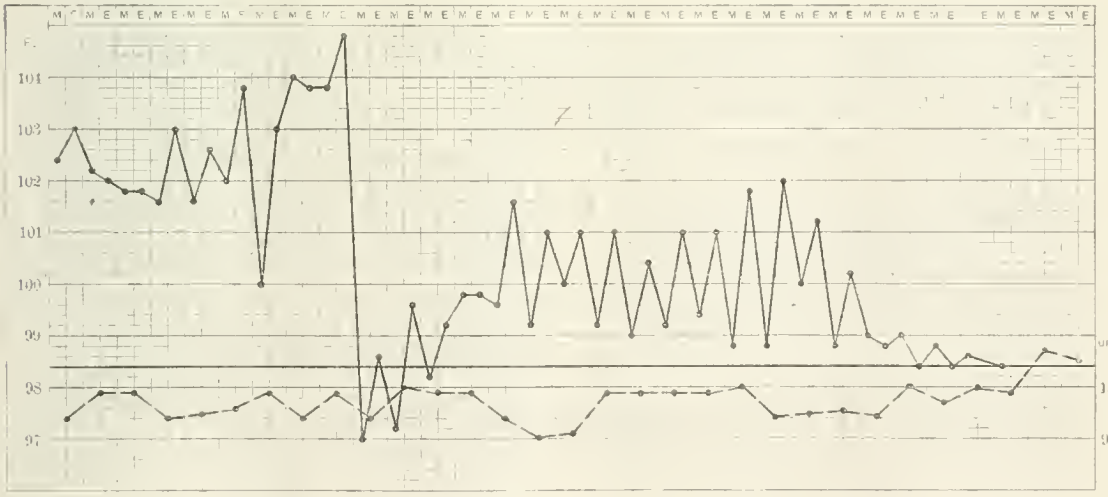
In the great majority of the cases it was scanty during the height of the fever, and rose only during convalescence; if, therefore, this series is reliable, and the measurements were made without any thought of the subject of polyuria, it would seem that the incidence of polyuria in convalescence is not nearly as common as most writers think, only eight per cent. of our cases showed a polyuria at any time, instead of 50 per cent., as Spitz has stated in his paper, or instead of being almost without exception in convalescence, as stated by Murchison.

As to the cause of the polyuria existing in this most remarkable case which we have reported, it was certainly not due to a pre-existing diabetes on admission, as for two days the amount of urine was normal, it fell to normal with convalescence, and has probably remained so ever since, as it certainly is as stated above at the present writing. It was not due to any organic condition of the kidneys, because the urine has always been, even during the existence of the passage of a great amount, normal so far as albumin and formed elements are concerned.

There would seem to remain of the ordinary causes of polyuria but two, the administration of salol, and the nervous condition of the patient. The salol was stopped on the second day of polyuria, but the abnormal amount of urine continued for almost one month after the discontinuance of the drug. It seems scarcely possible, therefore, that the salol could have been the causative factor. The patient was nervous, it is true, but when he was passing the greatest amount of urine he was much less nervous, than later when he was passing from three to four quarts.

The patient was not given the bath treatment. He was under treatment in a private room, and by direction of his physician was sponged at the temperature of 103 F. or over. It is quite within the range of possibility that these cold sponges may have had something to do with the polyuria, but it seems scarcely possible, because he received eleven sponges before the polyuria developed, and the condition continued eleven days after the sponges were stopped, although in gradually diminishing amount.

Fig. 3.



The dotted line represents the amount of urine, the solid line the temperature of patient.

As to the cause of polyuria in general this paper cannot deal. The most common causes given by authorities, however, are nervousness and some organic change, either in the nervous system, or in the kidneys themselves. Certainly the last two were not active in this case, and it would seem that the unusual amount of urine

was caused either by the very moderate use of cold water, or by the unusual and continued nervous, almost hysterical, condition of the patient.

We conclude: (1) That the urine during the course of typhoid fever is usually of high specific gravity and in amount below 1,500 c.c. in twenty-four hours. (2) In convalescence the amount of urine may rise in a small percentage of cases to 2,000, or even to 10,000 c.c. in twenty-four hours. (3) That in very rare cases there may be at times polyuria of from 3,000 to 8,000 c.c. in the twenty-four hours during the entire course of the disease.

TREATMENT OF ACUTE MIDDLE-EAR DISEASE.[1]

BY JOHN A. DONOVAN, M.D.,

OF BUTTE, MONTANA.

If it were not for the constant demand on every physician, specialist or not, to treat this most common disease, the great suffering of the patient and the bad sequelæ so frequently occurring from its nearly equally common mistreatment or neglect, I would not have selected this subject.

I omit its general pathology, assuming you are already familiar with it. Acute otitis (I will make no anatomical classifications) occurs most frequently in children, and nearly always follows some irritated condition of nasal pharynx; of these, the earliest and most common is adenoids, which should be looked for in all cases. The most simple method of examination is by using the finger; with the inexperienced, any method may fail to show the smaller growths, the most frequent but none the less annoying. If any ear or catarrhal symptom exists, the thorough removal of even the smallest adenoid tissue should be insisted on.

Every operator has his preferable method. I prefer the curet, finger nail, or nail curet. As to anesthetic, chloroform is extremely dangerous. I have on several occasions been obliged to resuscitate patients and operate after they have regained consciousness. This has occurred when the most careful physicians were giving the anesthetic, and every precaution taken. Ether is safer, or better still, some of the quicker ones, *e.g.*, nitrous oxide, etc. In infants and young children, adenoids can be thoroughly removed so rapidly that general anesthesia is hardly necessary, and there is almost no pain afterward. In older children and adults, cocaine may be used; in fact, a single application of 5 per cent. in young children may be safely used, and lessens the pain. In every case, thorough work is essential for the best results.

The next most frequent cause, and a condition usually accompanying this, is enlarged tonsils. They should be entirely removed, or as much removed as possible. This is only accompanied by seizing the tonsil with a good forcep (after trying many, I prefer Peter's), then, after separating the pillars, cut off with scissors, snare or tonsillotome. For this cocaine is safer, but many patients resent the combined operation without general anesthesia.

After these are the acute diseases, as scarlet fever, diphtheria, measles, etc. In measles, according to Bezold, the middle ear is injected early; post-mortems demonstrated this condition in many cases, with no symptoms observed in life. Quoting from Dr. D. T. Vail's paper, he says: "It is claimed, 4 per cent. of deafness is due to measles."

Scarlet fever is very commonly accompanied, and followed, by acute purulent otitis. It is more profound than that of measles, and more likely to bone necrosis, cranial complications, general septicemia and death, or permanent impairment of hearing. The same author states 19 per cent. of deaf mutes owe their condition to this cause.

In diphtheria, it is quite frequent, but hardly as severe. Influenza is sometimes accompanied by small hemorrhagic bullæ on upper part of drum, which rupture early. Suppuration and mastoid abscess is very common during epidemics of this disease. Other causes are brain disease, typhus, smallpox, chickenpox, erysipelas, whooping-cough, mumps, pneumonia, rickets, tuberculosis, syphilis, etc. The multiple perforation in early stages of tuberculous diseases is a decided aid in its diagnosis.

Having already mentioned the prophylactic treatment in adenoid conditions, it must not be overlooked in these other diseases, but more especially scarlatina, measles and diphtheria. In each of these, and in fact in any inflamed condition of the nasopharynx, a mild antiseptic wash would prevent many of the disagreeable accompaniments of the disease, and avoid many cases of otitis. In fact, R. E. Lander, of Southampton, England, after a vast range of experience with scarlet fever, reports in the *Lancet*, March 12, facts that make us believe our long-cherished dream of the contagious scales is about to vanish, for of patients leaving in two weeks, having had noses and throats made clean, the return cases were very much fewer than occurred from those who were retained till desquamation was complete.

As to the solution, a mixture of equal parts of borax, salt and soda, a teaspoonful to a pint of warm water, is very useful. This may be improved by adding six drams of glycerin, and if required to be more germicidal, formalin, say four to eight drops (the glycerin prevents its irritating action). To this, menthol, thymol, etc., may be added as desired, but pharmacists usually do not succeed in mixing them satisfactorily. These essential qualities are combined in thymo-glycerin compound or Pynchon's Dobel solution, which, when diluted, one ounce to the pint, gives a solution somewhat similar to the above, combining the therapeutic and antiseptic effect of menthol and thymol. Glyco-thymolin, borolyptol, listerine and other similar preparations are all useful, and it becomes largely a matter of individual choice. The formula given contains alka-

[1] Read before the Montana State Medical Association, Butte, Mont., May 18, 1904.

line salts in about the same proportion, and has a specific gravity much similar to blood serum when diluted.

As to the method of use, a simple glass douche is convenient, but ear diseases may follow it, though with proper care this should not occur. Putting not over a teaspoonful in the hand and snuffing it up is probably the safest, but it is difficult to get children to do this. When this is done by first holding the hand two or three feet from the floor, stooping to draw it up, then while still holding the nose in the hand and, raising the head, allowing the fluid to flow back to the pharynx, complete cleansing is accomplished. In children, it may be put into the nostrils by saturating cotton, then squeezing it, or with a dropper or spoon.

An atomizer, possibly, is the more likely to be used. Unfortunately, since the poorest atomizers are retailed at about the price of the best, and at much larger profit, the patient not being able to select, usually gets an inferior one. The De Vilbiss No. 16 and Century Nos. 10 and 50 have two bottles, and use oil and water, both always at hand. The De Vilbiss throws a spray or stream, as desired, in any direction, has metal trimmings, and is therefore easily cleaned. The Whitall Tatum, Nos. 30 and 33, have given me good satisfaction, also. The first two firms, and I think any first-class makers, will replace any defective goods. The physician should select one or more good ones, and stick to them, as patients never appreciate prescriptions for ones that do not work. The druggist does not care to carry great varieties of perishable rubber goods, therefore he should be informed of your choice.

Usually the first manifest symptom of acute otitis is pain. In infants, this is frequently overlooked; many develop meningitis before it is suspected. All infants should be carefully watched for manifest signs of earache. In adults, a diagnosis is easily made. Active treatment consists of relieving pain, endeavoring to avoid suppuration and other complications. Heat is the first remedy.

I advise a large fountain syringe filled with water as hot as can be borne, held about three to six inches above the ear, the water flowing into the ear through a return-flow ear douche emptying into a basin. The canal is then dried and filled with phenol, m. 50; glycerin, 1 oz., which is left in. This should be repeated every two to six hours, according to amout of pain. Take cocaine hyd., grs. 6 to 10; absolute alcohol, drams 1; aniline pure, drams 1; four or five drops in ear, repeated each hour till pain is relieved, is more effective, but much more dangerous. Both have a dehydrating action, which is much to be desired. Dr. Richards gives a formulæ: take phenol, m. 7; F. E. opii, m. 6; cocaine, grs. 3; atroph. sulph., grs. 3; aqua, m. 52; gelatin, grs. 18; glycerin, m. 158; M. S. Make 42 bougies. These have the advantage of convenience, safety, permanency and efficiency.

When pain persists after twelve to twenty-four hours of such treatment, I employ drainage. Formerly, I made free incision at this time into the drum, opening it from bottom upward very freely. For this, the cocaine, aniline oil and alcohol preparation is useful, but nearly always considerable pain persists.

Since selecting the title of this paper, I have in several cases used a method advised by Hazen in his little book, "New Findings," *i.e.*, the Eustachian catheter. He claims that the return flow of air carries out fluid secretions and relieves congestion. I use air hot as can be borne through the catheter, and in the few cases so far, results have been very gratifying. The Politzer method of inflation is injurious in this condition. After free incision has been made, the canal, having previously been cleaned, is now lightly packed with sterilized gauze, loose enough to afford drainage. If the opening has been made the first or second day, the discharge is likely serious, and an effort is made to keep it so, by free drainage and avoiding infection. Outside this gauze in the canal is placed a large gauze or cotton pad, sufficient to absorb all discharge reaching it. This outer pad is changed whenever it becomes damp; that in the canal is left twenty-four hours.

If the operation be done within the first forty-eight hours, a few days to a week or two is usually all the time required for healing; if done later, the time is considerably lengthened. If mastoid trouble develops and continues after the ear drum is freely opened, the bone should be opened. Free opening into the antrum and removal of all diseased bone, wherever found, under careful inspection in good light, should always be done. Follow the diseased tissue everywhere, irrespective of its location and dangers. Deaths from neglect to do this far exceed the possibilities of accidents in operating.

Conclusions.—1. In all diseases affecting the nasopharynx, always use reasonable precautions to avoid tubal infections.

2. Adenoid tissue, in any amount, and tonsils producing any pathological symptoms, should always be removed.

3. With the first symptoms of earache, use heat and dehydrating remedies; this not producing beneficial results in a few hours, treat surgically.

4. When possible, with a catheter use mild continuous stream of hot air early, and repeat in eight or ten hours.

5. If symptoms are not relieved by these methods within ten to twenty-four hours, make free incision through the entire drum, or extend into upper canal wall if necessary. Use aseptic gauze drainage and outside pad for absorption.

6. Never under any conditions allow the patient to suffer tortures for more than forty-eight hours and remain exposed to the risks of complications.

N. B.—Considerable experience with the catheter treatment, since writing the above, fully confirms the original hopeful anticipations, and has very much lessened the number of cases requiring opening of the drum.

THE VALUE OF EARLY INCISION OF THE MEMBRANA TYMPANI IN THE TREATMENT OF ACUTE SUPPURATION OF THE MIDDLE EAR.[1]

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ALTHOUGH my subject may seem a somewhat hackneyed topic to venture upon before such an audience, I have chosen it for the reason that I believe wherever a man's personal experience has proved of value to himself it may also prove of some service to others.

In Philadelphia, during the months of February and March of the present year, there was a marked increase in the number of cases of acute suppurative otitis media, occurring in conjunction with attacks of grip. As is so often the case in epidemics of grip, the complications not only were of the same general character, in this instance, largely aural, but also presented certain very definite individual peculiarities. Thus, the suppurative process developed with great rapidity, as a rule the abscess pointed and ruptured within twelve or fourteen hours after the onset of the pain in the ear. The discharge which ensued was at first very scanty, usually blood-streaked, but soon became very profuse. The pain continued to be intense for some days after the rupture of the drum occurred, in spite of free drainage of the pus from the middle ear. It was always worse in the afternoon, the patient being comparatively comfortable until that time.

In many cases pointing of the abscess and spontaneous rupture of the drum membrane occurred with such rapidity that the patient was not seen until subsequent to the appearance of the discharge. The cases to which the writer would particularly draw your attention were all of them observed and treated by him personally throughout their course. There were other cases occurring in his hospital service which he did not have the opportunity to follow up so thoroughly, but from the reports of his assistants these bear out the statements made concerning the twelve cases which are here presented.

In seven instances in the author's experience in which spontaneous rupture occurred, the patient suffered much pain in the ear for many days after the rupture had happened, and the discharge continued in two instances as long as four weeks, and in the other five for periods varying between ten days and three weeks. In three cases, in which early incision was practised, there was almost instantaneous relief from pain, and the discharge had ceased, in one instance, at the end of three days, and in the other two at the end of five.

After the drum membrane had been opened, whether spontaneously or with the knife, the same plan of treatment was pursued in all twelve cases. This consisted in a thorough cleansing of the ear once daily by mopping out with peroxide of hydrogen, full strength, applied on cotton pledgets, followed when the discharge was very profuse by injecting a few small syringes full of bichloride of mercury 1 to 4,000 solution. After thoroughly drying, a wick of iodoform gauze was introduced throughout the whole length of the canal, and left in position until the next day, the nurse or patient being given instructions to remove it if there were any evidence of it damming up the pus. I believe that drainage procured by this method is the most efficient means of avoiding stagnation of the discharge, pain and mastoid involvement.

When the pain was very great at the time that the dressing was done, I found that great comfort was given the patient if after cleansing the ear and drying it, an anesthetic mixture consisting of five parts of a 10 per cent. solution of cocaine, combined with 50 parts of anilin oil, and 50 parts of 5 per cent. of alcohol was instilled. This was allowed to remain in the ear for a few moments and mopped out before the insertion of the gauze drain. In two instances in which this mixture was used the patients' temperatures became subnormal, and they were very deeply cyanosed, the blueness lasting for several days. As a case of death has been reported occurring from the use of this mixture, it should be employed with considerable caution. Both the author's cases recovered without further interference. The gauze drain not only afforded relief by drawing off the pus, but the patients all seem to experience a sense of comfort, apparently because, as they expressed it in several instances, "it kept the walls of the canal apart."

The cases which the author observed would seem to him to have emphasized the following points in the treatment of acute suppurative otitis media. First, the great value of early incision of the membrana tympani. Second, the many advantages possessed by the so-called dry treatment, and by practising efficient gauze drainage. I believe that douching out the ear by the patient or nurse is distinctly contraindicated from the fact that no one but a skilled aurist can properly dry the ear after such procedures, and that the little pool of fluid which is left is very harmful in that it affords moisture for the furtherance of bacterial growth.

[1] Read by title at the meeting of the American Laryngological, Rhinological and Otological Society, June, 1904.

Nitrogen Necessary for Life. The atmosphere is composed of a mixture of oxygen and nitrogen, the former substance being essential to life. It has been a matter of scientific speculation, however, what part is played by the nitrogen, and whether it could be supplanted by hydrogen. Professor Marcacci, of Palermo, Italy, has recently shown that in an atmosphere artificially constructed with an equal amount of hydrogen substituted for the nitrogen, that life cannot be supported for any length of time. Professor Marcacci tried to keep animals in such an atmosphere, but he found that they soon died, the same effects being noticed as would result from cold. This is explained by the fact that hydrogen possesses greater conductivity for heat than nitrogen.

CONTRIBUTIONS TO THE PATHOLOGY AND TREATMENT OF ACUTE GONORRHEA.

BY LUDWIG WEISS, M.D.,

OF NEW YORK,

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(Continued from Page 492.)

FORMERLY when the causative factor of gonorrhea was unknown, temporizing during the acute stage and suppression of the discharge by astringents formed the main aim of treatment. By dint of some presentment of an etiological cause, the antiseptic astringents, especially the nitrate of silver, were employed, and as we all know with excellent results. But its microbicidal action was at times superseded by its irritating astringent properties, which are undesirable in the acute stage. Klotz,[78] however, recently advocates retrograde injections of two per cent. solutions of nitrate of silver. The untimely use of astringents in the first stage of acute gonorrhea by retarding phagocytosis would frustrate Nature's endeavors to flood out the gonococci. Not the cessation of the discharge by astringents should be our aim at this period, but the dislodgement and possible annihilation of the gonococcus by microbicides. Hence the injunction of old writers not to suppress the discharge too quickly. Their fear of a "gonorrhea sicca" as causing systemic complications was founded on broad experience, and, as usual, an excellent observation. On the lines defined by Neisser, to treat gonorrhea on etiological principles only, can success be achieved in the strenuous battle against this loathsome disease. We may probably not succeed to attain absolutely what we strive for: the gonococcus may even under the etiological treatment with the new silver compounds occasionally invade the deeper tissues and give rise to latent processes and complications, but with no other mode of treatment will such an occurrence be less frequent than with the etiological treatment of gonorrhea.

In order to exclude the irritating and caustic effect of nitrate of silver without dispensing with its eminently bactericidal properties, there have been devised of late silver compounds, known as silver albuminates, containing silver in organic combinations. They have in common the property of not being precipitated by chlorides and albuminates in the secretions.

The first of the series was argonin, a silver casein compound, containing 1.2 per cent. of silver; next largin, a paranuclein proteid, with 11.1 per cent. of silver; followed by protargol, with 8.3 per cent. of silver, and argyrol, a silver vitellin produced from the proteid derived from wheat, with 30 per cent. of silver.

In another group of preparations, by combining the nitrate of silver with various substances combinations were produced in which the silver is contained in a form resembling a salt, and these among others are argentamine, with 10 per cent. albargin, a gelatose silver, with 23.6 per cent. ichthargon, ichthyol-sulphonic acid, with 50 per cent. nitrate of silver. Their virtues are extolled on different scores. For instance, in albargin the silver is loosely combined with the proteid, which I cannot regard as an advantage, as maintained by Bornemann,[79] as it is apt to be precipitated too soon, before coming in intimate contact with the mucous membrane.

Much importance is of late being attached by exploiters of some of these preparations as to their ability to dialyze, and from these laboratory experiments a higher penetrative power has been deduced. Their diffusibility through animal membranes—through dead ones—is correct; but the urethral mucosa is a living membrane, and a very active one. Haidenhain has conclusively shown that living mucous membranes do not permit of dialyzation or osmosis. My own investigations corroborate this point. Whether a preparation dialyzes or not through dead membranes in laboratory experiments makes no difference; nothing diffuses through living membranes. Not the slightest demonstrable trace of silver could be detected in the deep epithelial strata when experimenting with any of these preparations, so that in respect to penetrating power in the living mucous membrane, they stand alike, *i.e.*, nil.

The experiments made by Schaeffer with argentamine, by Benario[80] with protargol, by Aufrecht with ichthargan, and by Martin with argyrol, were all faulty in conception, and therefore useless. They used dead liver tissue, and not even dead urethral mucosa. Martin,[81] in order to show the penetrative power of argyrol, employed strands of catgut. From the more or less deep impregnation of these tissues they sought to prove the power of penetration of these remedies. Dr. Edwin C. Burnett,[82] at the Association of Genito-Urinary Surgeons, Washington, May 12, 1903, found in his experiments on the living urethras of dogs and rabbits, by using a 1 to 5 per cent. argyrol solution, that it penetrated only the upper surface of the top layer of cells. These correspond with the investigations carried on by me and Dr. Henry Kreuder, of New York, in the latter's laboratory, the results of which will be published in detail elsewhere.

The living cell will absorb crystalloids like iodide of potassium, but is impermeable to mineral or colloid substances, of which the silver salts are made. Neither does the fact so vividly emphasized by Neisser, that these preparations, because they are not precipitated by the normal tissue fluids, as is silver nitrate, secure for them the virtue of possessing penetrative power. Neither of these two physiochemical conditions enables them to be absorbed by the living membrane. Penetration in the living membrane takes place by absorption, in the dead tissue through imbibition.

As to the bactericidal and antiseptic power, laboratory experiments, although not exactly reproducing conditions as they exist in living tissues, are of somewhat more value. As to these

properties there are differences among them, as will be shown elsewhere.

On account of their large percentage of silver (23 to 30 per cent.) albargin, ichthargon, and argyrol, are said to possess a more pronounced germicidal power than the other silver albumin preparations. Metallic silver is inert. In its chemical combination with nitric acid it yields the well-known nitrate of silver, justly held in high estimation by everyone. Porosz[83] and others think its action due to the liberated nitric acid. But these new proteid silver preparations are devoid of any chemical formula. Their existential idea is based on the anticipated conclusion that in combining silver with a proteid body, more or less homogeneous to the tissues, such a combination will, thanks to its unirritating properties, permit of a longer contact with the tissues, and allow of a diffusion through the cell textures. The wish here is the father of the thought. In every instance where any of these newer silver preparations has been lauded a high penetrative power has been attributed to it. It seems to have been a foregone conclusion that because a combination is of only slightly alkaline reaction, and because it contains so much silver, and because it is combined with some of the many proteid derivatives, such a loose unchemical mixture will at once upset the laws of physiology by rendering living membranes permeable to colloids because in a laboratory experiment dialyzation through dead animal membranes has taken place. A high percentage of silver is no indication of a greater gonocidal power, since compounds weak in silver have proved as effective in eradicating the gonococcus as other silver combinations containing much larger amounts, and which are employed in strong solutions. A very unpleasant feature of argyrol is its staining effect, and not only for cosmetic reasons, but also for its telltale nature, which is an objectionable quality for a drug used in this "secret" disease.

In my service at the German Polyclinic I have made control experiments for the purpose of determining the comparative irritation between protargol, in one-half to three-quarters per cent. solution, and argyrol in two to five per cent. Although the patients were not apprised of our intentions they invariably complained of some irritation when argyrol was used in from two to five per cent. In both instances some sensations of irritation were complained of. My own observations as to the possibility of irritation from argyrol are confirmed by some references to this point in the literature. In two cases the patients brought small dark gelatinous masses looking like "liver," which they had voided when urinating. The injection with argyrol was made four hours before, and the patients had not urinated since. Examination of this mass revealed argyrol in a congealed condition. This was proven by dissolving it in distilled water and adding ammonium sulphide. A precipitate of silver sulphide took place promptly.

As to protargol, Neisser, on the strength of Benario's investigations[84] after previous extended trial in his clinic, published his first report in 1897.[85] His excellent results were soon confirmed. I have dwelt extensively at an earlier period on protargol medication in several communications,[86] and will not attempt here even to partially enumerate the enormous literature which has accumulated since then.

Protargol is certainly the best studied of all the antigonorrhoics, having stood the test of time and being most extensively employed; and having in the greatest majority of cases yielded the best results, one is justified in drawing definite conclusions regarding it. Under its use complications have been avoided in a larger number of cases than with other preparations of its kind. Already in my earlier communications I attributed some astringent properties to protargol which were doubted by Frank.[87] I have since found that in the stronger solutions it certainly exerts such an influence, and Grossglick[88] also presumes this to be the case. Since astringent properties are desirable only in the second stage of gonorrhea to diminish the discharge and to combat the lesions due to the gonococci, and as these stronger solutions, 1½ to 4 per cent., are used only in the defervescing period of the process, it will here act as an antiseptic astringent, a property of protargol that has not yet been referred to, and to which I would like to draw attention.

Individualization.—Writers on the treatment of gonorrhea usually impart the advice not to generalize, but to treat each case as befits its condition. But outside of generalities we are not told how to do this. This is due to the circumstance that the pathology of gonorrhea—autopsies being of extremely rare occurrence—does not explain the clinical symptoms precisely enough to indicate what should be done or left undone under certain special pathological conditions. Therefore a certain amount of generalization will always be necessary, and we will have to individualize as best we can. The following is but a modest endeavor of individualization which I am in the habit of pursuing.

1. *As to the General Health of the Patient.*—The natural power of defense and the degree of such power is variable in different individuals. The so-called diathesis, for want of a better expression, undoubtedly plays a great rôle in gonorrhea also. In the lymphatic, gouty, diabetic, and in those afflicted with syphilis the acute gonorrheal process may run a course of different grades of severity, but it will usually be of longer duration and more prone to complications than in those untainted. I think this to be due to defective leucocytosis as a manifestation of a weakened repelling power of the system. The leucocytes may be so altered in their chemical, and probably in their minutest, as yet unrecognized, histological composition, that they do not, as is normally the case, present suitable nutrient media to the gonococci. They will not ingulf them, and the gonococci, in a large proportion at least, re-

main free outside the cells. In the discharge of such patients we will observe certain peculiarities which may be conveniently subsummarized as follows:

Scanty discharge; poor in serum, proportionately well supplied with leucocytes, but gonococci mostly outside of them; or abundant discharge: rich in serum, poor in leucocytes, and gonococci also mostly outside; in both conditions the toxins which the gonococci elaborate will have been only partially neutralized by deficient phagocytosis. The progress of the gonococci having been thus only incompletely checked they will invade the deeper structures and, exerting their deleterious influence, will cause complications to occur near and remote. This deficient phagocytosis will promote also a permanency and longevity of the gonococci. Furthermore, we know that the gonococci elaborate toxins, that is, products of their own metabolism; these toxins are in part neutralized by the leucocytes, provided they are present in sufficient quality and quantity, and partly will these toxins serve to destroy the gonococci themselves. They are destined to perish by their own toxins. Such is the case when the discharge possesses necessary conquering qualities, but in debilitated subjects these conditions will be found more or less altered and the process prone to become systemic.

Our aim, therefore, will be to establish, by all available means, a satisfactory discharge, trying to promote a local leucocytosis. Attempts have been made by Dehio to create such in lupus patients by a subcutaneous injection of the proteins of the *Bacillus prodigiosus* and *Bacillus pyocyaneus*. The tuberculin and antistreptococcus serum, etc., are employed on this same principle. Even speculative pharmacy has philanthropically introduced preparations of nuclein and nucleo-albumins for this purpose, but without effect. If we get such a case with the above-mentioned characteristic microscopical evidences within thirty-six hours after exposure, abortive treatment should be tried at once. In this condition I prefer to use nitrate of silver, which by its irritative power gives the best chance for augmented leucocytosis. But if a patient of this class presents himself later than thirty-six hours, but not longer than four to eight days after exposure, I resort to what I call heroic, early treatment, which is somewhat akin to abortive efforts. I initiate the treatment by the use of a one per cent. protargol solution, every four hours, two syringefuls to be kept for five minutes each, with the purpose in view of utilizing the slightly irritating properties of such a concentration to establish a serviceable discharge. In addition I apply a wet-pack around the penis—gauze strips soaked in diluted Burow's solution, with rubber tissue and roller bandages—during the day; in the evening a hot sitz-bath, or, if this is impracticable, immersion of the penis several times, for ten minutes, in water as hot as can be borne, and the wet-pack over night. I advise a nourishing diet and permit even the moderate use of beer. Besides these modifications the customary injunctions are exacted: the wearing of a suspensory; no bodily exertions; sexual rest, etc. The intelligent use of the microscope, of the greatest utility in treating gonorrhea, is absolutely indispensable here. As soon as a discharge rich in bodily elements shows up, the treatment must be changed at once. Protargol may now be employed in only ¼ per cent. strength in the customary way. The wet-pack and hot immersion are left off, beer interdicted, and the usual mode of treatment pertaining to acute gonorrhea is resorted to.

2. *As to Local Manifestations.*—Already the older writers distinguished the irritable or arterial form, the phlegmonous, and the catarrhal or lymphatic form. In the light of modern pathological views we may call these peracute, acute, and subacute gonorrhea. Clinically these forms show different degrees of inflammation. There may be present a superficial or deep gonorrheal process, one that is localized in the fossa navicularis only or extends over the whole pendulous portion or to the bulbous also, or where the deeper tissues are involved. This is due to the different degrees of virulency of the etiological factor, to the different receptivity of the tissues so affected, and to the variety of the pathological lesions caused. This deviation in manner of the three factors may be sufficient to modify the symptom complex and the different grades of severity in different individuals. It is obvious, therefore, that we cannot look forward to a remedy which would cover all these conditions, unless we can cause the invaded soil to react uniformly to the invasion, or have the gonococcus possessed with a uniform degree of virulence in all cases.

While I am a firm believer in the antiseptic treatment in the first, or purulent, stage of acute gonorrhea, I am also convinced that astringents are contraindicated in this stage. Formerly gonorrhea was held to be only a catarrhal affection of different degrees of severity, and the discharge its main symptom to be combated. Consequently astringents were exclusively employed. In the light of the modern conception, which concedes to the leucocytes the power of elimination and neutralization of the invading parasite, we look to a certain extent upon the discharge as a highly essential ally. But in the second, or muco-purulent stage of gonorrhea, when the system has done its best eliminative work, when the surviving gonococci and their toxins are lessened in numbers and attenuated in their virulency, permitting milder clinical symptoms to prevail, in the so-called subacute stage, an astringent will be useful.

Peracute Gonorrhea.—The treatment of this form should be one of extreme conservatism. Despite the promodern views of immediate interference, the old adage "nil nocere" should here be our guide. In the presence of highly inflammatory local symptoms, such as pouting of the meatus, dorsal lymphangitis, balanitis, folliculitis, cavernitis, chordee, ardor urinæ, and profuse gonococci-bearing discharge, even bland injec-

tions, let alone irrigations, are extremely painful, harmful, and fraught with danger of complications and of systemic diffusion of the process. The organism itself, which reacts so heroically to the gonococcus invasion, shows plainly that it is well fitted to cope with it. It draws on its resources plentifully. A mighty repelling battle is being fought, and instead of blood, which is not a rare intermixture, the white discharge floods the battlefield. It fairly begs in mute eloquence to be left alone! Do we inundate a highly inflamed wound with irritating antiseptics? Let no fear of entertaining antiquated ideas deter us—the railroaders of gonorrhea notwithstanding—to institute antiphlogistic and expectant treatment. Rest in bed with elevation of the penis, application of Burow's solution, or liq. plumb. subacet. c. opio, with cold water wrappings around it; a saline aperient and alkaline mixture (citrate of potash or soda in sweetened lemonade, a dram to the pint, is a pleasant, cooling extempore beverage), a bland and semiliquid diet will tide us over until the most acute symptoms have subsided, and the process enters the stage which is clinically called acute gonorrhea.

I employ a syringe large enough to moderately balloon up the anterior urethra. I deplore overdistention. To choose a syringe of different sizes for each patient, according to the capacity of the individual urethra, as recommended lately, while desirable, is impracticable and meddlesome. As the average capacity of the male urethra, that is of its anterior portion from the orifice to the compressor muscle, is about one to two drams, I think it best to use a syringe which will hold four drams. This will answer the capacity of any urethra. In injecting the contents tentatively and with great precaution and not to the point of forcing the cut-off muscle, this surplus will expand the urethra, smooth out the folds, and so will bring the remedy in contact with the whole diseased surface. The syringe should have an olive pointed tip, made either of porcelain or glass, soft or hard rubber; the barrel should be of glass with hard rubber mounting. The piston should act easily without jerking. The injection should be a prolonged one, *i.e.*, be retained in the urethra from ten to thirty minutes. The original recommendation of Neisser was that two of these injections—morning and noon—should be retained for five minutes, and the third, or evening injection, for thirty minutes. We need not adhere to these directions too slavishly; the main aim is to get the gonocidal remedy into intimate and prolonged contact with the mucous membrane. Should the fingers which hold the orifice closed become tired, the fluid may be allowed to escape and another injection be made afterwards. This may be followed by a third one, each time allowing the solution to be retained for five minutes, at least. Or the patient may inject, if there is a very profuse discharge, six times a day (the more the better), retaining it for five minutes and longer if he can. Mechanical devices for keeping the solutions in the urethra without the aid of the compressing fingers have been invented, but have proven failures.

It is impossible to make an arbitrary distinction between the different clinical phases of the florid stage. The symptoms overlap each other or coalesce. But it is quite feasible by studying the condition of the discharge to determine whether the process is in the beginning or in the acme of the florid stage. The usual time distinction by days or weeks is untenable, because an uncertain quantity.

The beginning of the florid stage is characterized clinically, besides the different subjective symptoms of pricking or smarting during urination, by a reddened somewhat puffy meatus, a muco-purulent discharge of milky or yet slightly creamy pus filling the orifice or appearing in it on pressure, but not yet exuding from it. Microscopically the greatest number of gonococci are found on or upon pavement epithelium or free, and only a smaller number in leucocytes. This shows first that the process is yet a superficial one, and second, that it has not yet extended beyond the fossa navicularis. If a patient with such clinical symptoms and microscopical evidences applies for treatment, with the second portion of the urine clear, showing no involvement of the posterior urethra or the adnexa, I begin active treatment at once. The patient having urinated, I flush the first of the pendulous urethra with warm sterilized water, using for the purpose the large 150 gm. sterilizable piston syringe with interchangeable porcelain or soft rubber tips. To avoid carrying germs into uninfected parts the patient compresses his urethra firmly, in such a way that the index and second finger of the left hand compress the urethra upwards and the thumb placed on the dorsum of the penis compresses it downward. This causes a pretty firm closure. The patient always willingly assists, as there is a dim tradition extant which undeservedly fell into oblivion of late, that compression of the deep urethra during injection prevents gonorrhea from spreading backwards. The cleansing done, injections of protargol in one-fourth per cent. strength are resorted to; two syringefuls every two hours during the day and twice during the night and each retained from five to ten minutes, yields excellent results. This is the condition in which early heroic treatment secures results almost bordering on abortion of the disease. By some this is claimed to be an abortive cure, and is so utilized in their statistics.

As conditions exist, however, patients will come for treatment when the acme of the florid stage is reached, and purulent, thick, whitish-green pus appears with increased inflammatory symptoms. This usually happens in the second week, and in patients with first infection. If in the judgment of the physician the inflammatory symptoms are not of a peracute character, then an immediate injection, two syringefuls, each retained for five minutes, every three hours, will act with great precision. A somewhat increased discharge will be observed during the first few days, showing al-

most nothing but abundant gonococci-bearing pus cells, epithelium being present only in a scanty quantity. In this form with sufficient leucocytosis and with moderately acute inflammation, interference is justified. In a few days, mostly at the end of the second or middle of the third week, the scene changes; the symptoms indicating a retrogressive inflammation are noticeable, the discharge becomes thinner and mucopurulent and then serous, diminishing in amount, the clinical symptoms gradually becoming milder, resembling the initial stage. Microscopically we will find at this time a diminution of the number of gonococci-bearing pus cells. Transition epithelium with gonococci covering it in clumps appears more frequently in the proportion as the process assumes a subacute aspect or tends toward recovery. As soon as these signs appear we must attend to the secondary lesions caused by the gonococci. These are erosions and fissures. It is in this stage that an astringent is absolutely necessary. Finger recommends in this stage either argentamine or nitrate of silver, but I think that they yet prove to be too irritating.

Subacute Gonorrhea.—This is a gonococcus infection of a milder character. As mentioned elsewhere this form is due either to an attenuated virulency of the gonococcus or to a lessening receptivity of the urethral mucosa. Both factors—the invading and repelling power—being of equal strength a deeper penetration of the gonococcus will not take place. What the process lacks in deep diffusion, however, is equalized by its extension to the adjacent parts. The symptoms being of a milder character they are easily overlooked by the patient and a surface extension may eventually take place by involvement of the posterior urethra and prostate. We consider here only that form of subacute gonorrhea which starts *ab origine* as such, with slow intensity and lenient in form, mostly in individuals that have had one or several attacks, or in those debilitated by some constitutional disorder. I am somewhat suspicious of this form when occurring as a first infection in a robust and healthy individual. Its insidious course invites negligency of attendance from the patient, and probably a somewhat undecided treatment on the part of the physician. I have frequently seen the bulbous part become affected and chronic posterior gonorrhea to develop. If in these cases the discharge contains the above described negative microscopical evidences I recommend active treatment to be initiated at once. If the gonococci-bearing leucocytes are present in a desirable quantity then the treatment should be less active. A medium degree of drug irritation in a sluggish case is apt to bear better results than a vacillating treatment. I do not mean that a mild process must necessarily be turned into a grave one. It is necessary only to give a slight impetus to the deviated natural process, like, for example, the application of the silver nitrate stick to sluggish granulations.

The treatment of this subacute form where the gonococci are located superficially should be pursued with the idea of removing them mechanically as well as remedially. That mechanical antisepsis with chemical agents proves of more value than indifferent solutions was emphasized by Kiss,[89] and also by Joos[90] and Woodruff,[91] who have used hot water, boric acid solutions and decinormal salt solutions with good effect. I regard them only as adjuncts to the antiseptic injections. A one-quarter per cent. protargol solution, one syringeful three times a day, will suffice to cause sufficiently active discharge by increased leucocytosis. While some may look upon this procedure as a somewhat unusual step I regard it necessary for the future welfare of the patient. Want of active inflammation causes persistency of the gonococcus. This is also evidenced by the stoppage of the discharge when epididymitis or inguinal adenitis complicates gonorrhea. It seems that the active inflammation in these parts causes a relative anemia in the urethra with diminished or even arrested emigration of leucocytes and undisturbed persistence of the gonococci in the subepithelial tissues. While I do not coincide with Schlossberg[92] that these complications are a cure—hastening corrective, yet it seems to me to strengthen my contention on the eliminative value of active congestion. Quite recently I have occasion to extirpate a packet of deep inguinal glands complicating a subacute form of gonorrhea. During the time that efforts were made to cause absorption by conservative means the discharge dwindled down to a small mucous drop with hardly any gonococci, appearing only on stripping the urethra. Twenty-four hours after operation a free discharge laden with gonococci reappeared, and the active urethritis was treated and cured without further complications.

The further treatment of all these forms of acute gonorrhea conform to the *microscopical* evidences. As soon as the leucocytes do not predominate any more and a liberal admixture of columnar or pavement epithelium supervenes with gonococci upon them and also free, we have arrived at the stage of decrease or terminal subacute stage. I then resort to astringents, using a one-half per cent. solution of zinc sulphate, alternating with the antiseptic four times a day, each being used every four hours. In the proportion as the gonococci and pus corpuscles diminish and give room to transition and pavement epithelium cells in the discharge the antiseptic injection is used in the morning and at bedtime, while the astringent is injected twice during the day. Soon the discharge will be reduced to a scanty morning drop, and then we have to turn our attention to the character of the shreds. So long as they contain gonococci and pus cells the alternate use of antiseptic and astringent injections must be continued. It will happen sometimes that gonococci are not present in the shreds while pus corpuscles are abundant. This calls for the alternate treatment yet, as the presence of leucocytes is always indicative of gonococci and secondary lesions. But if gonococci are absent and pus cells present

only in small numbers, diligent microscopical examination showing their gradual disappearance, while abundant epithelium indicates the final process of desquamation, then irrigation with the large hand syringe of silver nitrate solution of from 1 to 4,000 up to 2,000, without catheter, every other day, will prove highly curative to the secondary lesions. If the discharge shows up again I have found permanganate of potash in this stage, 1:6,000 to 4,000 extremely useful in allaying the effects of a previous overstimulating treatment. It may happen that through indiscretion or otherwise a subacute exacerbation may cause gonococci to reappear. Washings of the anterior urethra with a mild protargol solution (one-quarter per cent.), using the large syringe, will then be in order, while the patient uses an astringent at home. If the exacerbation yields a discharge containing streptococci and staphylococci and other bacterial contamination besides mucus, fibrin, and epithelia, characterizing the so-called secondary infection or bacillary nongonorrhoic uretritis, mentioned elsewhere in this paper, then flushing with bichloride solution 1: 20,000 to 10,000, must be employed. A viscid grayish scanty discharge in the meatus, which under the microscope shows only mucus and epithelium embedded in a network of fibrin, an occasional pus corpuscle and chains of cocci, is either a simple postgonorrhoic terminal catarrh or due to overtreatment. Gradual cessation of treatment and rest will soon cause its disappearance.

Cure.—This ends the injection treatment. The patient is now directed to report once a week. The usual mode of life is resumed gradually. If no discharge shows up within two weeks he is permitted to partake of alcoholics. The beer tests or a provocative injections of nitrate of silver, 1:1,000, are now tried either singly or together. Discharge following should be examined not earlier than twenty-four hours after its appearance, the urine to be centrifugated and the deposit examined. If after repeated examinations there are no gonococci present the patient may be regarded as cured. But I am in the habit of examining the patient once a month for three months. If no discharge is obtainable and if the shreds are negative I obtain some secretion for microscopical examination by expressing the prostate and seminal vesicles. In uncomplicated cases the Thompson two-glass test will prove sufficient. If posterior involvement is present the Jadassohn-Goldenberg three-glass test or Kollmann's five-glass test should be employed. These steps, however, serve to determine the seat of chronic gonorrhea, which is not within the province of this paper. I have dwelt on these points elsewhere.[93]

The complications of gonorrhea demand immediate cessation of active treatment. Edema, lymphangitis, chordee, ardor urinæ, cavernitis have been dwelt on under peracute gonorrhea. When acute posterior gonorrhoic urethritis, or urethrocystitis, or involvement of the prostate and epididymitis, etc., appear as much dreaded complications I adhere to the same principles that govern me in the treatment of the different enunciations of acute anterior urethritis. In the face of promodern theoretical reasoning to pursue active treatment, I feel satisfied that by employing rest, antiphlogistic and symptomatic treatment until the storm is over, I have done more for the comfort and safety of the sufferer than by pursuing to the bitter end the results of laboratory investigations. The stranguric patient's urethra is not a simple culture medium, in which the gonococci must be killed at all hazards. This test tube has sensitive nerves. The peracute symptoms over, active treatment can be gradually resorted to.

It is very difficult to enumerate all possible enunciations of acute anterior gonorrheal urethritis. In the foregoing some of the more common ones were merely alluded to. It is a sound principle to conform our treatment to the condition of the mucosa borne out by the microscopical evidences. The microscope is an absolute necessity for the intelligent treatment of gonorrhea. The methods of staining specimens—a useful, interesting and a not too difficult exercise—should be mastered by every practitioner treating gonorrhea. He will be amply rewarded by the results. That gonorrhea is a serious affection, especially in its later manifestations, must be impressed upon the patient as well as upon those of our ranks, who yet look upon it complacently as "only a little clap."

The treatment and handling of the affected parts should be done in a clean and aseptic manner. Both physicians and patient should beware of infecting their eyes. Ablution of the parts with a 4 per cent. boric acid solution should precede treatment. The hand syringe used by the patient should be kept in a clean piece of sterilized gauze. Before using it should be squirted through with hot water.

Realizing that there is still a considerable difference of opinion in reference to the treatment of gonorrheal urethritis, it occurred to me that it might prove both interesting and instructive to institute an inquiry which might afford some positive deductions in this vast field of negations. A list of questions was sent to 240 genito-urinary surgeons throughout the United States, of whom 127 responded, and I take this opportunity to extend to them my cordial thanks. Of these 29 failed to give any definite information for various reasons, and their answers cannot therefore be utilized. As my correspondents include many of the leading genito-urinary specialists in this country the results of this inquiry may be regarded as an authoritative expression of the present views on the treatment of gonorrheal urethritis.

To the question, "Is the destruction of the gonococcus the chief aim of your treatment?" 75 per cent. responded in the affirmative.

In reference to the inquiry, "Have you found the abortive treatment of value?" the views expressed are about equally divided, and this was also the case with the question, "Is it your cus-

tom to begin with local treatment in the most acute stage of the disease when highly inflammatory symptoms are present?"

The inquiry, "Which mode of treatment do you prefer, irrespective of the drug used: (the Janet method of hydrostatic irrigation; flushing with the large piston syringe, or injection with the full-sized hand syringe?) elicited no definite answers, since some correspondents had no choice.

In answer to the question, "Which among the new silver preparations has given the best results in your practice?" 50 per cent. expressed a preference for protargol, 50 per cent. preferred other silver salts (argonin, argyrol, argentamine, albargin, and sublamine).

It seemed interesting to determine whether complications are less frequent when the new silver salts are used, and in response to my inquiry on this point nearly 75 per cent. expressed themselves in the affirmative.

The inquiry, "What percentage of gonorrheas so treated by you becomes chronic?" gave rise to a wide difference of opinion. While about 20 per cent. of my correspondents stated that under their special treatment the disease rarely, if ever, assumed a chronic type; about 30 per cent. were doubtful, and the remaining answers ranged from 1 to 50 per cent. of cases.

Although I am aware that from such a limited number of data covering different conditions and drugs no definite conclusions can be deduced, yet it gives a partial outline of the prevailing ideas on this mooted question.

The majority of the correspondents seem to be imbued with the idea of the extreme chronicity of gonorrhea. The same majority are convinced also that some treatment should be instituted. It is this vast proportion of medical men that advocate mostly treatment on conservative lines. It is surprising that the abortive treatment, according to the returns, has such a large number of adherents. This, in my opinion, is due to the use of the new silver salts, as their lack of irritation in comparison with nitrate of silver makes their employment less painful and risky. As a large number commence treatment when highly inflammatory symptoms are present, this would seem also due to the new silver salts and their mildness of action. There is a wide difference of opinion. They have narrowed down considerably, the choice of the remedies answering the definite indications based on the biology of the gonococcus.

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THE DIAGNOSIS OF INCIPIENT PULMONARY TUBERCULOSIS.

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So much has already been aptly said and well written upon the diagnosis of incipient pulmonary tuberculosis, that I can hardly hope to bring forward any new or original thoughts on the subject. I shall try, however, to emphasize some facts which have been indubitably proven, but which are at present inadequately recognized.

Unfortunately the onset of tuberculosis is accompanied by such slight symptoms, that when the patient presents himself for treatment, several months have usually elapsed since the implantation of the tubercle bacillus first occurred; but a recognition of the disease even at this time is as a rule sufficiently early to justify the expectation of a cure.

The most common symptoms of pulmonary tuberculosis are, loss of bodily weight and strength, with failure of appetite and a tendency to become easily fatigued,—a symptom-complex which is generally summed up by the expression "run down." It is a safe axiom to assume that every hemoptysis is tuberculosis in origin until proved otherwise; and a similar rule may be laid down for an attack of bronchitis, which, without evident cause, lasts for more than six or seven weeks. A mode of onset which is fairly common, but by no means generally recognized, is that of pain and stiffness of the joints. In these cases the lungs are often not examined, and the patient is treated with various antirheumatic remedies without benefit. Observation is teaching us that quite frequently chronic arthritis is of tuberculous origin; and certainly arthralgic pains and peripheral neuritis are very common in tuberculosis of the lungs, as are also slight pain in the shoulders and back, and vague sense of oppression or discomfort in the thorax.

Distinct pain in the chest, due to a pleuritis, is usually not an especially early manifestation; neither are chills, fever or night sweats, at least not when these reach sufficient proportions to be complained of by the patient. Slight fever, however, of which the patient is unconscious, especially if recurring regularly towards evening or after exertion, is very suggestive. This pyrexia is, as a rule, very slight in amount, being perhaps only one-half or one degree above the normal, on which account it is often disregarded. Night sweats, too, are often trivial; they may be confined to the axillæ, and be attributed to an abundance of bed-clothes. Vasomotor paresis and cardiac erythism are frequently encountered; the former manifesting itself by transient erythema and sudation; the latter by tachycardia, which is still more increased by slight exertion or mental excitement; this acceleration of the pulse accompanied by dyspnea on exertion is very characteristic.

Prolonged or frequent hoarseness should always be carefully investigated, as should also dyspepsia, prolonged diarrhea or other gastro-intestinal symptoms. Cessation of the menses in women does not usually occur until the disease is considerably advanced. It should always be borne in mind that pulmonary tuberculosis—especially when the infection is a simple one—may not only exist, but even be well advanced, without the patient having been conscious of cough. All attacks of pleurisy should be treated as "suspects." A large proportion of these cases subsequently develop tuberculosis of the lungs, and have a similar origin. If effusion is present the aspirated fluid may be shown to contain tubercle bacilli, this being most accurately demonstrable by animal inoculation.

Careful questioning in regard to the patient's personal and family history will often beget information of the most useful character. In about two-thirds of the cases the source of infection can thus be learned and valuable data obtained as to the amount of time which has elapsed since the primary implantation took place; from which deductions may be drawn regarding the course which the disease has and probably will run. A second attack of supposed typhoid fever, or an unusually protracted siege of influenza, will often indicate the time when the tubercle bacillus first became pathologically virulent.

Attention has often been called to the habitus phthisicus—a flattened, elongated chest, with prominent clavicles and scapulæ, glistening bluish-white scleræ, dry, fine, brittle, lusterless hair; sunken or hectic cheeks; sharp nose; mydriasis; a red line on the gums, and other well-known signs. Any or all of these may be present, although usually not in early cases, and may be of help in making a diagnosis, but their absence should never throw us off our guard. Distinct tubercular lesions are often found in apparently well-nourished and robust individuals. The presence of slight spinal curvature, or of scars on the neck, the result of a lymphadenitis in early life, are much more important findings. Physiological sufficiency of the thorax is more to be looked for than mere anatomical configuration.

Physical Signs—At the very outset I should like to emphasize the necessity, in every case, of an entire and absolute exposure of the chest when making a physical examination. It is often stated that the majority of heart lesions may be correctly diagnosticated by inspection and palpation; but in no phase of internal diagnosis can more be learned from inspection alone than in pulmonary tuberculosis. Two reasons why this disease is so frequently overlooked is, that the lungs are examined through the clothing, and that the stethoscope is not employed. The latter is no less essential than the former, not only for careful localization, but in order to auscult certain regions at all; notably the supraclavicular fossæ, and the axillary apices, two of the most important regions.

Inspection of the chest should be made under good illumination, and care should be taken to

have the shoulders lowered and the muscles of the shoulder girdle relaxed. By standing alternately a little distance in front of the patient, and again by looking over the shoulders from behind, changes in the respiratory movements can be readily detected. On the affected side diminished or delayed expansion will be found, perhaps also restricted diaphragmatic excursion, the latter being due either to pain or to adhesions of the pleura. Supraclavicular and infraclavicular depression, or subclavicular flattening will often indicate the location of the lesion. Inequality of thoracic expansion can be very readily determined by means of a tape measure in which the ascending scale of inches is laid off in each direction from the middle. Distinctly restricted movement on one side of the chest without evident skeletal deformity should make us very strongly suspect tuberculosis.

Palpation is perhaps the least valuable of the four routine methods of investigation; doubtless because a thickened pleura vitiates the physical signs as evinced by fremitus. As a rule, however, corroborating evidence to that obtained by inspection will be produced, especially in regard to the amount and relative extent of the expansion.

Percussion usually elicits a change of resonance, which may range from slight impairment to absolute flatness; the note depending largely on the character, extent and depth of the pulmonary involvement, as well as upon the amount of pleural thickening or compensatory emphysema present. The apices of the lungs above the clavicles being near the surface should always be lightly percussed. Deep-seated lung involvement requires forcible percussion to elicit changes in resonance. The use of the fingers alone in percussing is to be preferred to artificial pleximeters, owing to the very valuable sense of resistance which is thus retained; at times, however, slight changes in pitch can be more easily detected by the use of an ivory instrument.

A careful comparison of corresponding areas should always be made, bearing in mind that under normal conditions the resonance is usually more marked in the right chest. If percussing the anterior surface, the patient's arm should hang relaxed at the sides; if posteriorly, the hands should be placed on the opposite deltoids; if in the axillary line, they should rest upon the head, the elbows being thrown slightly backward. As far as possible muscular relaxation should be attained, and the patient's head be held in the same planes as the body.

Percussion over a tuberculous area frequently produces pain, especially if there is marked pleural involvement; when performed over a cavity it is often productive of cough and expectoration; the latter phenomenon when occurring is, I think, very suggestive of a vomica. If the lesion is deep-seated and compensatory emphysema exists, hyperresonance may replace impairment. Abrams especially insists that tympany and not dulness is the note most often encountered in early tuberculosis.

In the acute differentiation of the percussion resonance the personal equation enters largely into account. An ear which readily analyzes musical notes will always be more expert in pulmonary diagnosis, other things being equal; but in every case special education and practice are necessary. It is not enough to be able to distinguish changes in sound; we must also be able to recognize the amount of their deviation from the normal, and to interpret their pathological import, if such they have. It is a safe plan to begin percussing over a part of the lung which we know to be healthy, and gradually approach the part which we know to be diseased. In this way we refresh the memory as to what true resonance is, or at least measure the extent to which it exists in the individual in question.

Auscultation reveals the most important information. Before resorting to it, however, it is well to spend some time in instructing the patient to breathe properly, "a little deeper than naturally," and seeing to it that he does so, before listening to the chest. This procedure is very time-saving in the end and eliminates many possible sources of error. If the patient's neck is craned forward or backward, and in some cases even in a straight position, rancous, throaty sounds will be transmitted to the chest, which may closely simulate bronchial breathing, and be the cause of much confusion. Stenosis of the trachea or pressure upon the bronchi from aneurism, tumor or enlarged bronchial glands, may produce a similar result. These cases are differentiable from tuberculosis through the equal bilateral quality of the sounds produced, and by the absence changes in resonance. Expiration should be passive, no voluntary expiratory effort being made. Patients suffering from any nasal obstruction should breathe through the oral cavity.

The entire chest must, of course, be carefully ausculted, but special attention should be paid to the apices above and below the clavicle, anteriorly; the supraspinous fossæ and the areas which underlie the inferior extremities of the scapulæ, posteriorly. The latter areas correspond to the fissure between the upper and lower lobes. If râles are absent, the patient should be made to cough forcibly and take deeper inspirations; a procedure which will often cause doubtful findings to become clear pathological manifestations. In the early stages of pulmonary tuberculosis glaring physical signs must not be expected. Expiration may be but slightly prolonged, or perhaps only roughened; in some instances an unduly suppressed and indistinct respiratory murmur is equally indicative of disease. Bronchial breathing does not occur until marked infiltration has taken place. Fine, hair-like crepitant râles, heard especially at the end of inspiration, localized to a certain area, though not necessarily the apex, are very characteristic of tuberculosis; but often much coarser râles may take their place or be commingled with them.

There is much truth in the hackneyed adage that a "unilateral catarrh is not a catarrh." Due,

but not too much, allowance must always be made for the bronchovesicular respiration which is normally encountered, especially in women, posteriorly over the bronchi; and anteriorly at the second right costosternal articulation. Tuberculous foci in the latter location have to be determined by the percussion changes, the pressure of râles, the date obtained by inspection, etc. The normal breath sounds at the right apex, similarly to the resonance, are more intense than on the opposite side. Pleural friction sounds are not infrequently heard over infected areas, coincidently with râles; they are usually low in pitch, rough, grating in character, unchanged by coughing, intensified by deep breathing, and remain localized for extended periods of time. Such frictions may be simulated by the sounds which the scapulæ sometimes produce in rubbing over the dorsal fascia; the latter, however, can be made to disappear by changing the position of the shoulder-blades.

As has been already stated, great care should be exercised to secure complete relaxation of the thoracic and dorsal muscles, because the sounds produced by contracting muscle fibers may considerably modify the character of the respiratory murmur, and a patient who is straining or even exerting his voluntary muscles will not breathe in a soft, natural and effortless manner.

But little attention should be paid to cog-wheel respiration. This phenomenon may occur from irregular contraction of the respiratory muscles, and is very common in excited or neurotic patients. It is noted in many non-tuberculous cases, especially anteriorly near the heart, and in lung areas overlying the large vessels. Subclavian murmurs are frequently observed; they usually appear or become intensified toward the end of a deep inspiration, and are apparently due to constriction of the vessels by consolidated lung tissue or adhesions. When heard they are perhaps suggestive, but by no means pathognomonic, of tuberculosis. Accentuation of the pulmonary second sound is a very constant finding, even in early cases. Cardiac murmurs are by no means rare; they may be due to anemia, relative insufficiency of the valves or otherwise abnormal heart action. Distinct organic valvular lesion, while by no means excluding tuberculosis, as formerly supposed, are not very frequent complications. Cardiac-respiratory murmurs are often met with; they possess neither diagnostic nor clinical significance.

The detection of tubercle bacilli in the sputum is satisfactory evidence as to the etiology of the condition; their absence, however, is no disproof of it. The sputum of advanced cases, with well-marked evidences of cavity-formation, often has to be examined a number of times before tubercle bacilli can be demonstrated; and in incipient cases often 20 or 30 examinations are required before a positive result can be obtained. Truly incipient cases have, as a rule, no expectoration whatsoever, the cough itself being often unnoticed by the patient. The present tendency to defer the diagnosis of tuberculosis until bacilli have been found in the expectoration is most unfortunate for the patient, and often humiliating to the physician. No hesitancy exists in telling a patient suffering from cardiac or renal lesions of their true condition, and insisting upon hygienic reformation; but the tuberculous individual, who harbors a far more curable disease than either of these, is allowed to remain in a benighted state regarding his malady until a physical breakdown brings to his own realization the fact that he is afflicted with more than a transient disease. The symptoms, clinical history and physical signs are in many cases sufficient to justify a diagnosis of pulmonary tuberculosis without an examination of the sputum at all; and until this fact is more generally recognized, the future, like the past, will witness the transport of a remediable incipiency to a hopeless advancement before the diagnosis is pronounced.

The demonstration of tubercle bacilli in the sputum may be considerably abetted by centrifugalization, or by the more recently introduced method of inoscopy—which consists of liquefaction of the sputum by a process of digestion before centrifugalization. Animal inoculation when feasible is also of assistance, but requires time and especial facilities. In the light of modern belief the infrequency of tubercle bacilli in early cases is easily explained. Nearly all investigation is tending to prove that this micro-organism is never inhaled directly into the air vesicles, and that pulmonary infection when present has always been preceded by an infection of the bronchial lymphatic glands; the portal of entry having been the bronchial or intestinal mucous membrane, the tonsils, etc. This being the case, the bacilli have literally to come through the lungs before they appear in the expectoration, a process which does not occur until necrosis of the pulmonary tissue has taken place. Large numbers of bacilli, unless continuously found, are not necessarily an indication that the disease is far advanced. They may be due to the breaking down of a small nodule, which happened to occur at the time when the sputum was collected for examination.

The tuberculin reaction is a useful adjuvant in diagnosis, to be held in reserve. While not infallible as a positive test, its absence precludes the presence of tuberculosis. The value of serum diagnosis is still sub judice. The X-ray, laryngeal mirror, and occasionally the ophthalmoscope, have been of distinct value in diagnosis, but unfortunately expert testimony is required to make the evidence thus obtained of material weight.

Differential Diagnosis.—The conditions which most closely simulate incipient pulmonary tuberculosis are syphilis, influenza, and mitral disease, especially slight grades of stenosis, healed tuberculous lesions and simple streptococcic infections of the lung, and non-tuberculous fibrosis. Much diversity of opinion exists as to the frequency with which syphilis affects the pulmonary tissue, but prevalent belief is to the effect that this is more commonly the case than is generally sup-

posed. Aside from a history of such infection, localized evidences, such as cutaneous scars or other tertiary lesions may be present. Syphilis usually begins at the hilum of the lung. It may spread upward, but more usually affects the lower lobes. Tuberculosis begins just below the apex, and generally affects the adjacent lobe before spreading to the opposite side. In syphilis there is, as a rule, equal bilateral consolidation, often without râles; emaciation, expectoration and fever are less marked, hemoptysis is more rare. The patient seems much less ill than would be the case from an equal amount of tuberculous pulmonary involvement. The tuberculin test is of no value in these cases because syphilitic patients sometimes give a positive reaction. A laryngeal examination may be decisive if this organ is involved; but generally the diagnosis hinges upon the sputum examination and the therapeutic test—tuberculous patients being nearly always made worse by the administration of mercurials and iodide of potassium.

Influenza and pulmonary tuberculosis are more frequently confused; but here the protracted course of the latter, the presence of a slight regular evening rise of temperature, night sweats, hemoptysis, progressive emaciation, accentuation of the pulmonary second sound, localization of the physical signs and tubercle bacilli in the sputum are features of differentiation. As has already been stated, many cases of supposed influenza are acute exacerbations of pulmonary tuberculosis. The mere recurrence of such attacks, especially if subsequently the health of the individual remains impaired, should make us very suspicious of tuberculosis. If a diffuse bronchitis co-exists it is often necessary to defer a positive diagnosis until the latter has cleared up.

Slight traces of mitral stenosis may render the diagnosis for a considerable time uncertain. In either condition we may have a rapid pulse, cough, expectoration, râles, easily provoked dyspnea and fatigue, gastric symptoms, accentuation of the pulmonary second sound, hemoptysis, etc. But here again cyanosis, with marked right-sided cardiac enlargement, diffuse unilateral involvement of the lungs, most marked at the bases, without pyrexia, as well as the absence of night sweats, are evidence in favor of a heart lesion. The blood pressure in mitral stenosis is apt to be slightly above the normal, while in tuberculosis arterial hypotension frequently exists. Precordial thrills are commonly encountered in the last-named disease, owing to general emaciation or to retraction of the lung; but when unaccompanied by mitral stenosis they are not presystolic in time.

Healed tuberculous lesions, if complicated by an acute infection such as bronchitis, require more or less prolonged observation, frequent examinations, and careful consideration of the anamnesis, subjective symptoms and general health.

Non-tuberculous fibrosis is to be recognized by its equal bilateral character, absence of fever, hemoptysis, tachycardia, night sweats, etc., but especially by the disproportion between the amount of lung tissue involved and the apparent illness of the patient, as well as by the absence of tubercle bacilli.

Some of the most puzzling cases are those which occur in old people, in whom the respiratory sounds are suppressed, or in those who are known to have emphysema, with perhaps cardiac and renal degeneration as well; in which the question arises as to the additional presence of an active or a healed tuberculous lesion. Such cases necessitate repeated physical examinations and the employment of all available diagnostic means. Fortunately, the diagnosis in these instances is of less moment than when occurring in patients of an earlier age; inasmuch as the tuberculous process is apt to run a slow and protracted course, so that under reasonable hygienic conditions the length of life is not naturally shortened thereby.

Simple localized lobular streptococcus infections of the lung, such as have been described by Finkler and A. Wassermann,[1] may so closely simulate tuberculosis as to be differentiable only by the continued absence of the tubercle bacillus from the sputum and a negative tuberculin reaction. Such cases, compared to the prevalency of tuberculosis, do not occur with sufficient frequency to make their similarity of much clinical importance.

It is always well to defer a positive diagnosis in cases of complicated pleural effusion, bronchitis or any other acute infection. A certain number of cases are encountered which for a time baffle even the most expert diagnostician. But repeated and careful examinations will usually solve the perplexity. The diagnosis of incipient primary tuberculosis should be within the power of every physician. The vast majority of cases require neither special facilities nor unusual abilities for their detection. It is largely a question of care and common sense, together with a reasonable degree of efficiency in medical knowledge and physical diagnosis.

It is a deplorable fact that many practitioners to-day are either unable or unwilling to diagnosticate pulmonary tuberculosis in its early stages. This is in part due to the general skepticism which exists to a greater or less extent in regard to the curability of the disease. To some members of the profession the fact that the patient makes a satisfactory recovery at home in the course of a few months is a proof that the disease was not pulmonary tuberculosis; notwithstanding the fact that nearly every human being has harbored some tubercle bacilli in his system at some stage of his career, and that autopsy statistics reveal distinct tuberculous lesions in nearly one-half of all cases dying from other diseases. The frequency with which supposedly incipient cases of tuberculosis are sent to the examiners of the White Haven Sanatorium, who upon examination are found to have two, three, or even more lobes of the lung distinctly involved, is almost beyond belief. Non-

[1] Fränkel Spezielle Pathologie und Therapie der Lungenkrankheiten, 1904.

tuberculous cases are not often diagnosticated as tuberculosis; but the reverse, unfortunately for the patient, is a common occurrence. It is time for the medical profession at large to realize more fully that attacks of chronic bronchitis, bronchopneumonia, influenza, typhoid fever, etc., less frequently "go into consumption" than that they are manifestations of tuberculosis from the onset. "It is probable that if the physician resisted his life-long habit of optimism and erred in the opposite direction in cases of suspected tuberculosis, the mortality list would be shorn of a measurable proportion of its bulk."—(Butler.)

The crusade against tuberculosis, which is having an awakening in this country, cannot be efficiently carried out by a few specialists alone. Neither will the multiplication of sanatoria throughout the land be of benefit to the population as a whole, or bear such fruits as will justify their erection, until the medical profession at large is able to recognize pulmonary tuberculosis in its incipiency, and is willing to send patients to these sanatoria who are still in a curable stage.

DIAGNOSIS OF ADVANCED TUBERCULOSIS.

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In taking up a subject which presents so many varied forms it becomes necessary to group the different types together in some systematic way in order to bring it within the limits of the present paper. The classifications according to distinct clinical types or depending on distinct pathologic conditions are too elaborate, except for a detailed study, the cases running one into another so closely and changing so constantly. The classification of Turban has been selected for the reason that, although somewhat crude and restricted, it possesses the advantage of simplicity, and further takes into account not only the local conditions, but also the constitutional effects of the disease.

Turban divides the cases into three classes: *Class I.* Mild cases, infiltration of at most one lobe, or two half lobes. *Class II.* Mild cases, infiltration of at most two lobes; or severe cases, infiltration of at most one lobe. *Class III.* All cases not included in Classes I and II. This paper will only consider Classes II and III, considering them together.

The diagnosis of tuberculosis has passed through various phases or epochs, determined by different important discoveries which had marked influence upon the methods of that period. Perhaps the first great step in more recent times was brought about by the work of Laennec, which started the era of diagnosis by "physical signs," at which time the diagnosis was based entirely upon the examination of the patient, with a tendency to disregard the history of the case and the symptoms. Later, under the stimulation of Koch's great discovery, it suddenly passed into the era of "bacteriologic diagnosis," at which time the enthusiastic supporters of this method disregarded physical signs and depended entirely upon the finding of tubercle bacilli in the sputum for their diagnosis. The influence of this idea has not been entirely overcome in the present day. With improvement in the method of treatment, which emphasized the importance of early diagnosis, every effort was bent upon discovering some absolute means of early diagnosis other than those in use. Thus the era of "early diagnosis" is characterized by various methods of diagnosis, each with its group of adherents all more or less enthusiastic. Even the most devoted followers of the Roentgen rays, tuberculin reaction, examination of the cellular elements of the blood, blood-serum agglutination tests, study of the temperature after exercise, and chemical examination of the urine as a means of diagnosis, emphasize the importance of merely considering them in conjunction with a thorough study of the case itself.

The age, sex, habits, social condition and general history have, of course, the same bearing in an advanced as in an early case, and I will only mention one or two points which have special significance in the former. The exact, or as nearly exact as possible, determination of the duration of the disease is important in its relation to the amount of involvement, when considering the nature of the condition present. This is true also of the general surroundings and mode of life of the patient. For example, a patient who has only slight involvement of long duration under unfavorable circumstances is distinctly different from a patient with extensive involvement of short duration under favorable circumstances. This point belongs perhaps more to a consideration of the prognosis and treatment, but a diagnosis is of little practical value unless it includes not only the presence of, but also the character of, the involvement.

In describing the symptoms I have tried to give, wherever possible, the proportion of cases of tuberculosis in which the different phenomena occur. The figures are taken from the statistical reports of Roepke and Turban, for the reason that these two authors use the same classification, to which I have already referred.

The symptoms to be considered are cough, loss of weight, hemorrhage, night sweats, chest-pains, dyspnea and cardiac palpitation.

Cough.—This is perhaps the most frequent symptom in advanced cases of tuberculosis, it being extremely rare for cases to proceed to this stage without more or less marked cough. That cases may rarely go on to even cavity formation without severe cough should never be lost sight of. It is in no way characteristic, varying in time, character and degree. The expectoration also varies greatly, both in quantity and appearance, from the thick, tenacious, nummular sputum to fetid purulent material. The morning cough with expectoration, due to the retention of secretion over night, may first attract the patient's attention to the presence of cough, but is not distinctive. Both authors quoted give this symptom as occurring in 100 per cent. of cases in this stage.

Loss of Weight is as common a feature as the foregoing symptom. It varies from merely slight loss, which it may require very careful questioning to bring out, to marked emaciation. It is generally progressive with occasional slight remissions under favorable circumstances. This was also present in 100 per cent. of cases.

Hemorrhage.—When it can be definitely determined that the hemorrhage is from the lung itself, this is a most valuable sign. It may not infrequently be the first symptom to call the patient's or the physician's attention to the lungs. The nature of the hemorrhage in regard to its cessation, whether spontaneous, following violent effort or trauma, is important. The statistics quoted by Osler in regard to hemoptysis in general give interesting figures. Of apparently spontaneous hemoptysis about 86 per cent. are due to tuberculosis, of those following exercise about 74 per cent. are due to the same cause, and of those following trauma 50 per cent. are not due to tuberculosis. On the other hand, 70 per cent. of Roepke's cases had hemoptysis and 61 per cent. of Turban's. Mitral stenosis as a cause of hemoptysis is not uncommon and should always be excluded.

Night Sweats.—Although not quite so frequent as the former symptom, they are not uncommon, occurring in 55 per cent. of Turban's cases. They may occasionally be very severe in character and form a most distressing symptom. They occur most frequently in the early morning hours.

Chest-pains.—These may occur between the shoulder blades, in the shoulders, or in the sides of the chest, the two first mentioned occurring more frequently in the early cases. The pains in the chest itself are much more common in the advanced cases, due either to an extension of the tuberculous process to the pleura or to some associated inflammatory process.

Dyspnea and cardiac palpitation, although in no way distinctive, are not uncommon symptoms. The former frequently may cause the patient great distress, and does not seem to bear any constant relation to the amount of lung tissue involved.

Fever.—This is not a constant feature, but the cases are extremely rare that do not show some elevation of temperature at some time during the twenty-four hours. This elevation may be slight and detected only by careful methods in using the thermometer, and frequently goes undetected when these precautions are neglected. I refer to insisting upon the patient keeping the thermometer well under the tongue, the lips kept tightly shut, not taking the temperature directly after the patient has taken anything hot or cold, and being careful to leave the thermometer in the mouth from six to ten minutes. The type of fever varies greatly, not only in different cases, but in the same patient at different times. An afternoon or evening rise with morning remissions or intermissions is by far the most common. This rise may be very high at times, with marked intermissions, and shows, as a rule, decided irregularities. Some writers lay great stress also upon a premenstrual rise in the temperature in tuberculous female patients, and others upon a rise in temperature following exercise.

Pulse.—A rapid pulse is the rule, not always proportionate to the degree of fever or even the amount of involvement. Cases which show very slight rise in temperature, showing frequently a pulse of 100, 120, or even 130. The character of the pulse is not typical, although a full but soft and compressible pulse is commonly noted.

Physical Examination.—In the examination of the patient we have the most important method of diagnosis. The signs elicited vary greatly in character and require not only careful but repeated examinations to determine their significance.

Inspection.—By this means one notes the general appearance of the patient, character of skin and mucous membranes, amount of subcutaneous fat and general muscular development. More important, however, are the configuration of the chest and expansion of same during respiration, noting the rate, excursion and a comparison of the two sides. There has been so much stress laid upon the long, narrow, phthisinoid chest, with its vertical ribs, narrow costal angle, and projecting scapulæ that I merely mention it in passing. It is met with quite frequently; Roepke shows 26 per cent. Another type of chest is that with a narrow anteroposterior diameter. Any form of chest, however, may be the seat of tuberculosis. Localized retraction or tardy expansion of either one or both apices, especially depression above or below clavicles, are also valuable when present, and when sought for carefully will be found not infrequently.

Palpation is mainly useful in confirming inspection, especially in detecting diminished expansion, and in estimating vocal fremitus, the latter being increased over consolidation or cavity, and diminished over collections of fluid or thickened pleura.

Percussion.—On percussion the note will vary according to the amount of infiltration, consolidation, excavation of, or effusion into, the tissues beneath it. Where the infiltration is disseminated, and there is still a comparatively large amount of air-containing lung-tissue between the tubercles, one may get an impairment of the normal note which is extremely difficult to determine. In percussion of the apices one obtains the most important information, as at this point the involvement is further advanced and the signs, as a rule, are more evident. The percussion of the clavicles, supra and infraclavicular fossæ, therefore, gives one the most decided results; especially is this true if only one lung is affected, and one has the opposite lung for comparison. The difference between the two being best brought out by getting the patient to take a deep breath and then hold it, when the percussion at corresponding points on the two sides may show the impairment or dulness to be quite striking. Occasionally the dulness may be more evident posteriorly than anteriorly, and the percussion of the supraspinous

and intrascapular spaces should never be omitted. The note obtained may vary from a slight impairment to dulness, according to whether one is dealing with a disseminated infiltration or a consolidation. Over deep-seated cavities with consolidation around them one may get a note which varies very little from the normal, or may even be dull. Over superficial cavities, however, the note is hyperresonant or even tympanitic. When cavities are quite superficial one occasionally finds the typical cracked-pot sound. It is of importance in percussing the chest that the muscles should be well relaxed; this is best obtained by having the patient in a comfortable sitting position with the shoulders "dropped."

Auscultation.—The auscultatory phenomena are so numerous that I will merely mention those sounds most closely identified with the varying degree of involvement. With slight infiltration one may get merely a prolongation of the expiratory murmur and feeble breath-sounds, or occasionally harsh respiratory murmur, which may be jerky or "cog-wheel" in type. Râles when present are generally fine and crackling, and may be only noted at end of deep inspiration after a cough. As the amount of infiltration advances the respiratory murmur changes, expiration becomes more prolonged and higher-pitched until consolidation occurs, when it becomes bronchial in character. The râles also become more numerous, as a rule, and are larger and more moist in character. Over cavities of moderate size the breath-sounds are cavernous, or occasionally may be amphoric, and râles are large and bubbling. Vocal resonance is increased over any infiltrated area (except where thickened pleura or pleural effusion intervenes) in direct proportion to the amount of involvement until consolidation is reached, when bronchophony or whispered pectoriloquy may be found. The latter is, of course, best heard over cavities, especially when superficially situated. Pleuritic friction rubs may be frequently noted, and are often very hard to differentiate. Considerable consolidation around a bronchus may simulate a cavity very closely.

As to the value of percussion and auscultation in making a diagnosis, some authors claim greater precision in one, and some place more value on the other. It is a personal matter entirely, which must be settled by each one for himself. A careful application of all the methods of physical diagnosis will, perhaps, give the best results.

Urine.—Although the examination of the urine may give very few data in this condition, it should never be omitted. Glysocuria and albuminuria, while not common, occur not unfrequently, the latter in the later stages, due probably to some degenerative change in the kidney. A positive diazo reaction is a very unfavorable sign in tuberculosis; except as an aid to prognosis the test has little value in this condition. Ehrlich's dimethylamidoazobenzaldehyde reaction in the urine is not typical of tuberculosis, as it occurs in numerous other pathologic conditions. Another condition suggested as being indicative of tuberculosis is phosphaturia alternating with albuminuria.

Sputum.—In the examination of the sputum we have a most valuable and positive aid in the diagnosis, and one fortunately that is very easily carried out. The presence of tubercle bacilli in the stained expectoration is an absolute diagnostic sign of tuberculosis. The contrary, however, does not hold good, and the absence of tubercle bacilli from the sputum does not exclude this condition. A frequently repeated and carefully made examination of the sputum will in many instances reveal their presence. Roepke found the bacilli present in 67 per cent. of cases in Class II, and in 100 per cent. in those of Class III. Turban found them present in 89 per cent. of cases in Class II, and in 98 per cent. of cases in Class III.

Tuberculin.—This agent has been highly recommended by numerous observers, more, however, as a means of confirming the clinical examination than as a means of diagnosis in itself. It is useful mainly in early cases, as the results are not so good in the more advanced cases. Its field of usefulness is somewhat limited, however, as it requires keeping the patient under very careful observation for a week or ten days, although one investigator has used it in dispensary cases with fairly satisfactory results. It has not been used to any great extent, owing to the prevalent idea that it may disseminate a localized tuberculosis.

Blood.—The examination of the corpuscular elements of the blood gives very little assistance. The blood counts and findings are not constant. Especially is this true in the early stages, when it would be of most value. The absence of eosinophiles, however, has an unfavorable, and their increase in number a favorable, prognostic value.

The serum agglutination test of Arloing-Courmont is unreliable, as shown by numerous observers. The technic is also too elaborate for general use, requiring laboratory facilities for its performance.

Roentgen Rays.—Although quite satisfactory results have been obtained by the use of this method, it requires a careful special training in order to be of any value at all.

DIFFERENTIAL DIAGNOSIS BETWEEN PULMONARY TUBERCULOSIS AND CONDITIONS RESEMBLING IT.

BY H. R. M. LANDIS, M.D.,
OF PHILADELPHIA.

The conditions simulating advanced pulmonary tuberculosis are so numerous that lack of time will necessitate only a brief reference to many of them. Therefore, I will restrict this paper to those conditions which have caused errors in diagnosis, both by members of the staff of the Phipps Institute and by members of the profession who have referred cases to the Institute.

Most of us have a definite picture of pulmonary tuberculosis in its advanced form, and a case giving a history of loss of weight, cough, expectora-

tion, hemoptysis, fever and night-sweats in association with certain physical signs is usually looked upon as most certainly tuberculous.

There are two points, however, which, if kept in mind, will obviate many mistakes. The first is that pointed out by Fowler, namely, that there is a definite "line of march" taken by the invading tubercle bacillus. The disease almost always starts just below the extreme apex on one side and pursues a downward course. The lower lobe of the lung first affected is almost invariably involved before the apex of the opposite side is attacked. This always results in the disease being in a more advanced state at the apex than in the lower lobe.

The second point of importance is the examination of the sputum in all cases of pulmonary disease. While too much stress has undoubtedly been laid on the finding of tubercle bacilli in incipient tuberculosis it can be safely said that too great laxity prevails in similar examinations in what are apparently advanced cases. Systematic examination of the sputum is insisted on at the Brompton Hospital, and this precaution alone has led to the detection of many obscure conditions.

In taking up the diseases which simulate tuberculosis it may be said that some of them are quite rare and can be dismissed with a word. Actinomycosis, aspergilesis and hydatid disease depend for their recognition on the absence of tubercle bacilli and the positive identification of the rav fungus, mycelium of hydatid booklet. The same brevity may be applied to intrathoracic growths which are usually evident from the history, pressure symptoms and physical signs.

Among the common conditions causing confusion is *chronic bronchitis.* This is particularly the case in advanced life, where the tuberculosis often runs a latent course, with a normal or subnormal temperature, and the associated emphysema masks the physical signs. The diagnosis in such cases offers considerable difficulty, and may be impossible without the finding of the tubercle bacillus. There is nothing distinctive of tuberculosis either in the symptomatology or the physical signs. Suspicion as to the true condition may be aroused, however, from the following points: The cough, while worse in winter, never entirely disappears; on physical examination it may be noted that the signs are more marked at both apices or at one apex alone; and in addition a definite history of exposure or family predisposition may be present.

Bronchicctasis.—This is a not uncommon source of error, especially in the diffuse form in which the bronchi of a lobe or even an entire lung may be dilated. The dilations may be sacculated, cylindrical or fusiform. The condition is almost invariably secondary to some prolonged inflammation of the bronchi or to induration or consolidation of the surrounding tissue. Therefore a history of prolonged bronchial inflammation, measles, whooping cough, pleurisy, and particularly pneumonia, is important.

There is no single symptom of tuberculosis which may not be present in this condition, but there are several points which render the diagnosis probable, and with the absence of tubercle bacilli it becomes almost a certainty. Cough, expectoration and dyspnea are the important symptoms. The expectoration is quite characteristic, occurring in large quantities at a time, and particularly on rising in the morning. The dyspnea is variable, depending on the extent of lung tissue involved and the implication of the right heart. Pain in the chest is frequent and important, usually indicating extension of the process to the surface of the lung. Fowler states that clubbing of the fingers is so extreme as to be of value in the diagnosis. In three cases I have seen this was certainly true.

The physical signs in the majority of the cases show the lesion to be at the base or about the root of the lung. Fremitus is usually increased, especially if fibrosis coexists. The percussion note depends on the underlying condition: if there be surrounding emphysema the note will be hyperresonant; if the dilations be large the note may be tubular or tympanitic in character; while if fibrosis be present dulness is the result. The breath sounds are bronchial or cavernous, while whispering pectoriloquy and amphoric breathing are present over a superficial dilation. The râles may be large and bubbling and of a metallic character, or, in the presence of fibrosis, superficial and crackling. The "veiled puff" of Skoda may also be present. I have met with this sign in one case. It occurs at the end of inspiration and gives the impression of a puff of air suddenly entering the dilated portion of a superficially placed bronchus.

When the dilations are confined to an upper lobe the differentiation is more difficult. In bronchiectasis of the upper lobes the dulness rarely extends above the clavicle, and the flattening below the clavicle is slight as compared to that in tuberculosis. The greatest source of error is in those cases in which there are signs of a cavity in the interscapular region. While a tuberculous cavity may exist at this point, it is rare without some evidence anteriorly.

Fibroid Lung.—Also referred to as chronic pneumonia, cirrhosis of the lung and interstitial pneumonia.

Pathologically the condition is characterized by an overproduction of fibrous tissue, which tends to diminish the size of the organ and to cause marked retraction of the chest wall. The opposite lung, unless both are involved, shows a marked degree of emphysema. It is believed by some that the pulmonary process is but a part of a general fibrosis, because of the associated arteriosclerosis and contracted kidney sometimes met with. Sir Andrew Clark, Hadley and Chaplin, in their monograph on fibroid disease of the lung, made the following divisions: (1) Pure fibrosis in which there is no tubercle; (2) tuberculofibrosis, a condition primarily tuberculous, but in which extensive fibroid changes have taken place;

and (3) fibrotuberculosis, a condition in which the primary state was fibroid, but subsequent infection with tuberculosis takes place.

Pure fibroid disease is not uncommon in children, and in these cases there is generally a history of some catarrhal affection of the lungs, either measles, whooping-cough or bronchopneumonia. In adults a history of pneumonia is frequent. Other contributing causes are bronchiectasis, inhalations of irritating substances, pleurisy, syphilis and foreign bodies in the bronchi. A long-standing empyema may cause collapse with subsequent fibroid changes. One such case came to autopsy at the Phipps Institute. Two of the authors above quoted believed the condition to be more common in children, while the third had seen more cases among adults. Cough, expectoration and dyspnea on exertion are the symptoms most commonly observed. Marked deformity, as a rule, characterizes the disease. The affected side is retracted; the ribs become approximated, or may even overlap; the spine is drawn toward the affected side, and the heart is pulled out of its normal position, the retraction always being toward the affected side. In right-sided fibrosis the apex beat may be in the fifth interspace in the nipple line on the right side.

The physical signs are variable, and depend largely on the presence or absence of bronchiectasis. When dilations of the bronchi are present the percussion note may be tubular or tympanitic in character; in their absence it is usually dull. With dilation of the bronchi the râles may be bubbling and metallic in character or fine and crackling. The breath sounds may be bronchial or cavernous, or, in the absence of dilations, feeble and distant. The emphysematous condition of the opposite lung gives a hyperresonant note, which may extend beyond the median line of the sternum, and the breathing is puerile in character. Basic heart murmurs are commonly present, usually at the pulmonary orifice, and systolic in time.

In differentiating pure fibroid disease from fibrosis with an associated tuberculosis, the presence or absence of the tubercle bacillus is of course the all-important point. In addition, pure fibrosis runs an afebrile course, the constitutional disturbances are slight, and the opposite lung shows no signs of infiltration or consolidation.

Among the older clinicians, *syphilis of the lung* was looked upon as comparatively frequent. Later the existence of syphilitic disease of the lung was questioned unless it could be demonstrated pathologically. In proof of the rarity of the disease is the experience of Fowler, who states that in a careful search among the museums of the London hospitals he could find but twelve examples of syphilis of the lungs, and in two of these it was doubtful. Recently, however, papers by Janeway, Stengel and Berg would seem to indicate that the condition is not infrequently met with.

Pulmonary syphilis may be strongly suspected if a patient presenting the physical signs and symptoms of tuberculosis has no tubercle bacilli in the sputum after repeated examinations, and in addition has evidences of tertiary syphilis. During the past winter I have seen two colored women who illustrate these points. Both came to the dispensary complaining of cough, profuse expectoration, hemoptysis (in one case), night sweats and loss of weight. The physical signs closely resembled those of advanced phthisis without cavity formation, except that in one case the signs were more marked at the base. In one case there were typical syphilitic leg ulcers, while in the other there were scars on the arms and body of a recent rupial eruption. One case has been lost sight of, but in the remaining case no tubercle bacilli have been found, and she is showing marked improvement under potassium iodide. A case reported by Stengel made a complete recovery under potassium iodide, although he had been admitted to the hospital in a dying condition.

There still remains another condition which experience has shown to be a frequent source of error, namely, *mitral stenosis.* I mention it simply to call attention to the fact that this valvular lesion is a frequent source of blood-spitting. The only cases of mitral stenosis which should offer any difficulty in determining the source of the blood are those in which there is no murmur. In these cases careful examination will usually reveal a faint thrill above the apex beat, accentuation of the second pulmonic sound, a small pulse, and that peculiar quality of the first sound which Da Costa designated as clacking.

In conclusion, I wish to emphasize the importance of keeping in mind the definite "line of march" taken by the invading tuberculous process and the necessity of systematic and repeated sputum examinations in all doubtful cases.

HISTORY-TAKING IN CASES OF PULMONARY TUBERCULOSIS.

BY CHARLES J. HATFIELD, A.M., M.D.,
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In this discussion we are to assume that a patient comes to the examining physician with some indication of tuberculous infection. This indication is to be verified and explained; a diagnosis is to be made and the stage of the disease determined; upon these findings will depend the prognosis and treatment. A careful record of related facts is necessary in the study of any serious illness, and in no disease is the record of greater importance and interest than in tuberculosis, where a history, carefully compiled from the statements of an intelligent patient, is of immense value in helping to determine diagnosis, prognosis, and even treatment.

The records of age, sex, color, social condition, nativity (ancestral and personal) and places of residence are naturally made first. Each of these data has an obvious diagnostic or prognostic value, either in itself or when considered in connection with some significant symptom. Thus a child or a person in middle life will have a more favorable prognosis than will a young adult, or a

patient debilitated by age; a woman will present various forms of tuberculous lesions, *e.g.*, those affecting the uterus and its appendages, which require special investigation; the negro in America is peculiarly susceptible to the disease, and exhibits a power of resistance considerably less than that of the white man; a married patient offers problems in the management of the case quite different from those of the unmarried; a native American is usually much better able to order his life for health and happiness than is a foreign-born immigrant; and the knowledge of the place of residence, whether healthy or the reverse, will aid materially in prescribing for a case.

With the questions as to occupation, family history, habits of life and previous diseases, we enter upon a most interesting field of study, where we may hope to discover the actual exposure to contagion, or at least circumstances predisposing to the disease. It is certainly a gratification to be able to point to some definite association in the history, and to say, with a certainty that satisfies yourself, at least, "There the disease was contracted." The effect of occupation is a most important study. The German authorities pronounce it, when a wage earner is under consideration, of more value than the family history. In this investigation, it is by no means sufficient to know only the present calling of the patient, for a fairly large percentage of cases, having been previously warned that they are "threatened with lung trouble," have in consequence secured positions at outdoor work, as drivers or motormen; whereas, formerly they may have been tailors or cigarmakers. A safe rule is one suggested by a colleague, who is in the habit of making a complete record of all the occupations successively engaged in, and the time spent in each, since the school days. In the list of significant occupations, we can include all those that necessitate a sedentary life, in crowded workrooms, with the possibility of bad ventilation, uncleanliness and dust. In one clinic at the Henry Phipps Institute, during the past year, of 234 cases of tuberculosis, there were 23 tailors, 19 mill hands (operators upon machines), nine cigarmakers, six weavers, six seamstresses, and six clerks—these six occupations supplying almost 30 per cent. of the cases treated.

In the family history, we find most frequently, perhaps, evidence of exposure to contagion. We should have a record of the age and health of each living member of the preceding, immediate and succeeding generations. One is not infrequently able to trace infection to some near relative who has been coughing and expectorating for years, who has a chronic form of the disease that has never been recognized, and who may live long after the victims of his ignorance or carelessness have been buried. The record of family deaths with the ages at death, the fatal illnesses and the dates of death, is still more prolific of interesting facts. In drawing our conclusions, however, we must remember that all tubercle bacilli, even the most virulent forms, lose their vitality in about six months, if we are to accept Cornet's statement, based upon Kitasato's experiments. Therefore, if we are to establish a connection between the condition of our patient and the disease causing the death of a relative, we must be sure that the exposure was either before the death or very soon after. In cases where there is obscurity as to the source of contagion, careful inquiry as to the health of the more remote relatives will often be profitable. When the patient is married, the health of the consort and of the consort's family is of interest and importance. A number of cases can be gathered from the literature of tuberculosis, where a husband or wife suffering from a chronic form of the disease, before succumbing to it, has infected and buried two or more successive consorts.

The question of house infection will naturally be considered in connection with the family history. The fact that tuberculosis is a house disease has been conclusively demonstrated. Therefore, a careful questioning of the patient as to the houses he has occupied during the period of possible infection, together with the character and health of the previous inmates, is often productive of definite results.

The personal habits of a patient have considerable weight in fixing the time and manner of contagion. It is generally admitted that any vicious mode of life, which consumes vital powers and lessens tissue resistence, is predisposing to the disease. Alcoholism, for instance, certainly produces a fertile soil for any infection, and perhaps most frequently for the tubercle bacillus.

When we come to consider the history of previous diseases, we are getting close to the first manifestation of specific activity. When the patient gives a history of a comparatively recent attack of malaria, typhoid fever, pleurisy, pneumonia, or influenza, from the effects of which he has never fully recovered, he may be telling only of the acute illness which left him with a weakened system, an easy prey of tuberculous infection. How frequently, however, we can say, with almost absolute certainty, that the so-called malaria, with its fevers, sweats and slight bronchial irritation, was an acute manifestation of tuberculosis! This error in diagnosis is the one most frequently met with in clinics devoted to tuberculous cases. The same statement is true to a less degree of the history of a recent attack of typhoid fever, where again the fever, prostration, digestive disturbances and the respiratory symptoms have been tuberculous; of pleurisy, which, when primary, is very frequently tuberculous; of pneumonia, with its almost identical clinical picture; and of influenza, that convenient term for any respiratory affection not easily classified. Other diseases which may be of especial interest in the previous history are diabetes, syphilis, gout and rheumatism; and, in childhood, measles, pertussis, scarlatina and diphtheria. The record of traumatism, especially such as would

injure the thorax or cause a long confinement to the bed or room, is often significant.

When we reach this point in our investigation, we are in a position to estimate, with a fair prospect of success, the approximate duration of the disease. If we have a definite source of infection, with a history of symptoms beginning within a few months after the period of contact, the task is easy. We must always remember the extreme chronicity of the disease, and must not hesitate to go back a decade or more in order to find the source whence the sequence of symptoms originated. In this attempt to fix the probable duration of disease, we can hope for no direct assistance from the patient, as his idea of the origin will rarely include more than the beginning of the present acute exacerbation. We must bear in mind, moreover, that the determination of duration is going to affect our prognosis; the fact cannot be disputed that cases who have had tuberculosis for a long time, and who show only moderate involvement, respond to treatment better than do the more rapidly advancing cases. Whether this can be attributed to superior strength of constitution, or to an acquired immunity, it is impossible to say, although the trend of modern investigation seems to point to the latter as the correct view.

In considering the subjective symptoms, we should first record the time when the first sign became manifest to the patient. Usually, a very careful inquiry must here be made, as the patient will easily overlook a gradual loss of weight or strength, or a slight morning cough with expectoration. Next, hemoptysis, whether slight or copious, and when first apparent, must be noted. If pain is present, its location and character are of interest. The character of the cough, whether slight or excessive, worse at night or by day, should be recorded; also the amount, character and color of the sputum. Almost every patient will complain of some dyspnea, slight or marked; and we should make note of how this dyspnea is produced, whether only at night and in paroxysms (asthma) or when lying down (cardiac disease); whether it is continuous, or appears only on exertion. Is hoarseness present? If so, is it persistent or temporary? The presence of chills, night-sweats and edema should also be noted.

The condition of the gastro-intestinal tract should be carefully investigated, for upon its integrity and efficiency, we must largely depend in the modern treatment of tuberculosis. The appetite, the condition of the stomach, whether any dyspepsia or nausea is present, the condition of the bowels, where looseness may possibly indicate intestinal involvement—all these inquiries and records are of vital importance. If the patient is a woman, the periodicity and character of the menstrual flow, or its failure to appear, should be noted. The presence of leucorrhea and its duration is also a matter of interest, because of the theory held by some of our prominent specialists, to the effect that the flow is often indicative of a primary tuberculosis of the uterus or the tubes. Finally, of the subjective facts, we must inquire concerning the previous weight of a patient, recording his best weight and its date, the average weight in health, and the lowest weight since the beginning of the illness. A loss of one-third of the highest weight recorded is a basis for the gravest prognosis.

It is not possible in the scope of this paper to speak in detail of the recording of all the objective symptoms—the results of examination. It is of vital importance, of course, to keep records of the weight, pulse, temperature and respiration for each visit, as these symptoms are the best guides in prognosis and treatment.

It may be said that in an outline for history-taking such as has been given, there are entirely too many details for a practical man, who wishes to make a short cut to his diagnosis. We must remember, however, that careful study of every case of tuberculosis is of importance in the great struggle against the disease, and the assistance of every man is needed. Moreover, with a system carefully mapped out, a complete history of any case can be made in a half-hour.

The outline followed in this paper is in general the one adopted and now in process of development at the Henry Phipps Institute.

MEDICAL PROGRESS.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

Pathology of the Suprarenal Glands.—G. Marchetti (*Virchow's Archiv*, Vol. 177, No. 2) has carefully studied the suprarenals in all autopsies during two years, and states his observations as follows: Accessory adrenals are most common along the anterior surface of the kidney or the hilus, or in the neighborhood of the spermatic artery. Displaced portions of the gland are more common, and always remain connected with the main gland by means of a pedicle of gland tissue or connective tissue. They consist chiefly of the zona fasciculata, but are often not altered in severe disease of the gland itself. Inclusions may also be encountered occasionally in other organs, as the ovary. Venous congestion is a frequent symptom, seen most distinctly at the junction between cortex and medulla. Punctiform hemorrhages are more common than larger ones, and are encountered in intoxication (eclampsic, jaundice) or infections (typhoid, pneumonia). Hypertrophy may be primary and total in valvular disease or compensatory and total where the second organ is destroyed or compensatory and partial, where a tumor, etc., has invaded one end. The medulla never participate in the process, but in the cortex the cells are closely set. The effects of trauma were well seen at the autopsy of a man who had been run over a year prior to his death: a large coagulum was found in the kidney region, which contained many fragments of the corresponding adrenal; those which had retained their capsule were hypertrophic and functionating, while the rest had undergone degeneration. Fatty infiltration is common in diseases of the heart and vessels, acute infectious disorders and cachetic individuals. The organs will increase in size and assume a bright yellow color on section. The only case of primary malignant tumor was a small carcinoma, detected accidentally in a man who

had died of pneumonia, while secondary nodules were found in cancers of pancreas and liver. The only benign tumors seen were a lipoma and a nodular hyperplasia of the medullary substance.

Paget's Disease of the Nipple.—K. ZIELER (*Virchow's Archiv*, Vol. 177, No. 2) does not believe that carcinoma secondary to eczema of the nipple starts in one case from the flat epithelium of the skin and in another from the cylindrical cells of the excretory ducts. It is useless to discuss this question any longer, since the development of malignant tissue necessitates the presence of an entirely new type of cells, originating either from the flat or cylindrical epithelium, or both. These cells result from degeneration of normal cells already present, and are especially common in eczema. Paget's cancer is thus closely allied to cancer secondary to a number of skin affections, such as leucoplakia, lupus, senile warts, etc. The disposition toward malignancy is, however, much greater than in the other affections.

Esophageal Glands.—In fully 70 per cent. of all cases J. SCHAFFER (*Virchow's Archiv*, Vol. 177, No. 2) found glands in the esophagus between the lower edge of the cricoid cartilage and the fifth tracheal ring resembling those which normally occur at the cardia. They lead to an excretory duct lined with high cylindrical epithelial, and where they end on the surface the esophagus may be clothed for some distance with cylindrical epithelium, giving rise to the so-called macroscopic erosions. Examination of young embryos shows that these areas are derived like the rest of the esophageae epithelium—from the original stratified non-ciliated cells, but for some reason they do not acquire the cilial characteristic for this period, and later on retain their cylindrical shape, while the rest of the cells undergo metaplasia and become converted into stratified cells.

Immunity Against Streptococci.—Investigations undertaken for the purpose of obtaining information as to the identity of the streptococci found in cow's milk and their relation to those found in the human organism, are now published by D. H. BERGEY (*Univ. Penn. Med. Bull.*, August, 1904). Goats and rabbits were treated with repeated increasing doses of certain streptococci isolated from cow's milk and from human beings, for periods of from three to nine months. The sera of these animals were then tested as to their agglutinating, protective and curative properties. It was found that the serum of animals immunized with cultures of streptococci acquires an agglutinating power for all varieties of streptococci, though the agglutination occurs in somewhat higher dilutions for the homologous culture than for those derived from other animals. The agglutination reaction affords no means of definitely differentiating between cultures of streptococci of human and animal origin. The serum of an animal immunized with cultures of streptococcus shows no definite bactericidal action against such organisms. The serum of animals immunized with cultures of streptococcus possesses some antitoxic effect against the toxic action of the filtrates of streptococcus cultures. The protective and curative properties of antistreptococcus sera as at present prepared are of very slight value, as indicated by animal experimentation. No great reliance can be placed on the statements of the efficacy of the antistreptococcus sera in the treatment of streptococcus infections, until animal experimentation gives us more definite insight into the mechanism of streptococcus infection and the manner in which the organism overcomes such infection.

Carcinoma of the Breast in a Cat.—Malignant tumors are not at all uncommon in domesticated animals, so that the finding of a typical cancer of the breast in a pregnant cat need not astonish. On examining the tumor microscopically, E. v. LEYDEN (*Zeitsch. f. klin. Med.*, Vol. 52, Nos. 5 and 6) was very much surprised to find the structure in every way the same as that of the corresponding growth in man, and, like it, many of the cells contained the so-called "birds-eye" inclusions, concerning whose nature there is so much dispute. The author still adheres firmly to his parasitic theory, and states that the inability to isolate, grow and inoculate the germ is not really an argument against its causal relation, since we are dealing, not with bacteria, but with protozoa, whose peculiarities are as yet little understood. It is impossible to explain the inclusions as merely evidences of cell-degeneration.

Constituents of the Blood Which Are Visible by Ultramicroscopical Methods.—By means of the ultramicroscope, recently devised, E. RÄHLMANN (*Deutsch. med. Woch.*, July 14, 1904) examined the secretions from diseased mucous membranes, and found, aside from the emigrated white cells, numerous bodies which were apparently derived from the epithelium and consisted of bits of protoplasm and nuclei. These had the property of changing both their shape and position. It was also found that certain changes occurred in the blood plasma as well as in the cells, which may serve to explain the rôle which the blood cells play in the metabolic processes of the organism. The conclusions are as follows: It is well known that a great number of red cells derived from the erythroblasts of the red bone-marrow and other places are constantly thrown into the circulation, and from the appearances seen in the ultramicroscope it seems proper to believe that the mature erythrocytes are broken up into very minute particles in order to make room for these accessions. The duty of these particles is to regulate metabolism within certain limits in every part of the body.

Leucocytes of Pus.—All forms of leucocytes could be detected by J. LEUCH'S (*Virchow's Archiv*, Vol. 177, No. 1) in pus examined by the eosinate of methylene blue stain. The neutrophile, polynuclear elements are most abundant and nucleus degeneration is very common; one type very frequently encountered is a neutrophile cell, with very dark, ball-shaped nuclei not giving evidences of chromatic network. Eosinophiles are frequently absent at first and plentiful later on, at a time when micro-organisms can also be detected. There does not seem to be any difference in acute or chronic pus, since eosinophiles occur in about 50 per cent. of each. They are generally better preserved than neutrophiles. Mast-cells are also frequent, but the granules rarely retain their original form, but generally appear coarse and irregular. Hymphocytes are often hard to distinguish from degenerated leucocytes or free, swollen nuclei and their protoplasm may be lighter or darker than the nuclei. Micro-organisms can be well demonstrated with the stain and are found free or within the neutrophiles. In most serous fluids examined and lymphocytes predominated, especially where tuberculosis was probable.

PHYSIOLOGY.

Relation of Blood Platelets to Coagulation.—The simplest way of obtaining blood platelets suspended in normal plasma for study is to let a drop of freshly-drawn blood fall upon a smooth piece of paraffin. The blood will not coagulate, but the red and white cells soon settle to the bottom, while the platelets will rise, so that if the upper surface of the drop be touched with a coverslip after twenty to thirty minutes, the latter may be obtained almost pure. If larger quantities are desired, a paraffined glass canula is inserted into the carotid, the blood drawn into a paraffined graduate and then allowed to settle in the

ice-chest. It is not probable that the platelets are formed from either red or white cells, since the latter show no signs of breaking up and retain their ameboid motion, and hemoglobin cannot be detected by the spectroscope. The theory that they are independent elements is still further strengthened by the fact that they may be observed circulating in the blood of the uninjured wings of bats. K. BURKER (*Münch. med. Woch.*, July 5, 1904), describes the bodies in question as follows: They are lentil-shaped and about three mikra in diameter, but occasionally present one or more processes so that they appear not unlike spermatogoa. They are furthermore colorless, possess ameboid motion and, with proper strains, show a central body. If examined in the fresh specimen, they do not retain their integrity very long, but soon break up and form the nuclei for long strands of fibrin. The coagulation of blood is influenced considerably by temperature and also varies much during the day, but is approximately the same for different individuals at the same temperature and same hour. There is a direct relation between the number of disintegrated platelets and the amount of fibrin and influences which retard the formation of the latter will also delay the breaking down of the cells. Various chemicals also influence both processes in the same way so that there can hardly be any doubt that they are closely related to each other. This is rendered still more likely by the fact that the weight of the platelets approximates the weight of the fibrin formed.

The Influence of Potassium Upon the Heart and Blood Vessels.—The intravenous injection of salts of potassium affects the heart and blood-vessels in a twofold manner. By direct action upon the circulating organs and by vasomotor action, according to L. BRAUN (*Pflüger's Archiv*, July 9, 1904). Only in the smaller doses do the potassium salts seem to have a stimulating action upon the cardiac muscle. Large doses of potassium damage the heart; removal of the potassium from the latter results in a speedy disappearance of the bad effects. Potassium has no vasodilator effects.

The Influence of Sea-Climate and Sea-Bathing Upon Metabolism.—The familiar experience that a stay at the seashore, together with a course of sea-baths, results in a stimulation of the bodily metabolism, is sustained by the experimental observations of A. LOEWY and F. MÜLLER (*Pflüger's Archiv*, July 9, 1904). An estimation of the changes in the oxygen consumption and the production of carbon dioxide was made. Individuals differ in the degree with which they react to the climate and baths of the sea. Three types may be distinguished: One shows no reaction to the climate and a slight reaction to the baths; the second type shows in the beginning a strong but afterward a diminishing reaction to the climatic factors, but displaying throughout a marked reaction to the baths; the third type shows a continued reaction to both factors. Moreover, the results vary in the same individual. Thus, west winds and an increased force of the waves increase the body metabolism. The stimulation of metabolism would go hand in hand with the stimulation of appetite, digestion, and psychic functions. The former, as well as the latter, is of reflex origin, the stimuli being various physical factors, such as lower temperature, movements of the air, etc. One cannot, however, predict the manner or degree in which the individual will react to these stimuli. The increase in appetite and the increase in metabolism have nothing to do with each other; they arise independently, and may occur singly or coincidently.

The Resuscitation of the Cranial Cells.—The recent epoch-making experiments performed by Kuliabko, in causing the human heart to beat as late as forty-eight hours after the death of the body, might have aroused the hope that it would in time be possible to bring the dead back to life. The above observer, in commenting upon this subject, scouted this idea as vain and fruitless, in pointing out that death starts first of all in the delicate structures of the central nervous system, and that it would be necessary to revive the latter before we could even consider the possibility of starting again the bodily machinery. An experimental investigation of the changes that accompany the death of the cerebral centers was made by F. MÜLLER and A. OTT, (*Pflüger's Archiv*, July 9, 1904). The authors endeavored to determine whether one is justified in maintaining the conception of the excessive sensitiveness of the gray matter to a cessation of the circulation of the blood, and whether it might not be possible, by means of a renewed and artificial circulation, in restoring the oxygen supply and removing the accumulation of waste-matters, to bring back the functional activity of the cranial cells. Nissl's method has revealed profound changes in the structure of nerve-cells even before death in animals slightly wounded. The researches of the authors show that immediately upon the cessation of the flow of blood to the brain, substances reacting acid to litmus-paper are quickly formed. The renewal of the circulation by means of a warm solution similar in composition to blood-serum results in no restoration of cervical activity, even though oxygen-starvation or an accumulation of metabolic products be guarded against.

MEDICINE.

Polymyositis and Polyneuritis in Measles.—The first case reported by W. JESSEN (*Berl. klin. Woch.*, August 8, 1904), deals with a woman of thirty-two years, who, ten days after the breaking out of an attack of measles, developed a diffuse painful swelling of the muscles, accompanied by edema. There was no enlargement of the spleen and the mucous membranes remained intact. A recovery came about very slowly. A polyneuritis after measles has thus far only been observed in two cases, to which E. EDEN (same journal), adds a third. A girl of sixteen years developed otitis media and bronchopneumonia as sequela to measles. She also presented hyperesthesia of the skin and tenderness on pressure along the various nerve trunks. The symptoms gradually subsided and were attributed to the measles as no other cause could be found for their appearance.

Diabetes Insipidus Treated by Strychnine Injections.—In the case reported the patient, a man of forty-nine years, developed diabetes after a fall which resulted in a severe shock to the nervous system. His previous health had been excellent. B. LEICK (*Deutsch. med. Woch.*, August 11, 1904), states that he tried various methods of treatment without success, until he began the injection of strychnine, as recommended by Feilchenfeld. The nitrate was given in daily quantities of from 0.0025 to 0.005 gms. for twenty days. The urine, which had amounted to 8,000 c.c., continued to steadily decrease in amount. The drug had to be stopped at the end of twenty days, on acount of the symptoms of intoxication, but the urine continued to decrease in amount down to 2,400 c.c. The patient's general condition also improved and at the end of four

weeks the urine was about 2,000 c.c. daily and the man was practically cured. No explanation of the action of the drug in this case is offered by the author.

Treatment of Chronic Colitis.—It is the opinion of J. SHOUP (*Am. Med.*, August 27, 1904), that the various types of chronic colitis are simply different stages of the same disease and may all be treated in a similar manner. Most of these cases occur in women and are accompanied by gastropsis, enteroptosis or nephroptosis. SHOUP believes that the condition is due to the entrance into the intestine of improperly prepared chyme, which by causing irritation and inflammation, finally brings on a chronic colitis. Where a ptosis of the internal organs is present, he overcomes this by supporting them with a corset, put on while the patient is lying down and which is laced from below upward. The treatment is reviewed as follows: The attack of pain which precedes the passage of mucous may be relieved by a hypodermic of morphine and atropine. Thorough evacuation of the bowels is secured by large doses of castor oil and high enemas of oil or alkaline solutions. Diet must be selected for the individual case, after a chemical examination of the stomach contents has been made. Digestion must be assisted and fermentation allayed. The bowels may be kept open by oils given by mouth, which act both as laxatives and lubricants. When necessary, astringent enemas may also be given. Sufficient rest is important, especially after meals, and, when practical, a change of air and scene is useful.

PEDIATRICS.

The Absorption of Fats in Infants.—An experimental investigation of the varying capacities of the absorption of fats in the infantile intestine was made by P. NOBÉCOURT (*Rev. Mens. des Maladies de l' Enf.*, August, 1904). The amount of fat absorbed is found by taking the difference between the amount taken in with the food and the amount found in the feces. In this way may be obtained the coefficient of absorption. It is necessary, however, to take into account the quantity of fat ingested, for, in fact, if the infant take very little fat, nearly all of it may be absorbed, while, on the other hand, if a great deal is ingested, a large amount will be found in the feces, even though the digestive and absorptive powers may be quite marked. In general, healthy, breast-fed infants have a very marked absorptive capacity for fats, even though they be permaturely born. A more or less constant impairment of this capacity is found in weak, dyspeptic infants, in infants sick with intestinal or pulmonary infections, in cases of myxedema. In convalescents from measles the absorption of fats is normal. In determining the kind of food the infant should have, it is necessary to take account of its fatty absorption coefficient. In infants who ingest a quantity of fat too great in proportion to the amount absorbed, it is necessary to diminish if not the quantity of milk, at least the quantity of fat. In certain cases skimmed milk or buttermilk produces excellent results.

The Significance of Bacteriological Methods in the Diagnosis of Diphtheria.—Most practising physicians have encountered cases of mild sore throat in children, looking not at all like diphtheria, and yet bacteriological examination revealed the presence of the diphtheria bacillus. The question would then arise. Is it a case of diphtheria, or of ordinary tonsillitis, the Klebs-Löffler bacillus being present, as it is in many normal throats. A critical study of the entire subject of the bacterial diagnosis of diphtheria is made by B. CZERNO-SCHWARZ (*Arch. of Kinderheilk.*, Vol. 39, Nos. 1 to 3), with the following conclusions: Of undoubted value is the negative result in the repeated investigation for the Klebs-Löffler bacillus. The bacteriological method has revealed that even membranous anginas, membranous larygitides and croup may be non-diphtheritic. Rauchfuss, in 1894, published a learned array of such cases. Since that time this fact has received general acceptance. The author observed, among others, seven cases of laryngeal stenosis with a clean throat (which cases always arouse the suspicion of diphtheria), in which repeated examination did not reveal the presence of the Klebs-Löffler bacillus. The author is equally positive as regards the positive result of bacteriological examination, in cases in which the clinical picture is one of diphtheria. The author agrees with Schabad that hardly any one at this date would fail to make the diagnosis of diphtheria if the clinical picture is of this disease and if the culture is positive. On the other hand, in all those remaining cases in which the clinical picture and the positive culture do not agree, one has no certain criterion upon which to base a diagnosis. In all these cases a diagnosis of diphtheria should be made, at least until the time when bacterial diagnosis shall have made further progress, not alone upon the subject of the presence of the Klebs-Löffler bacillus, but also in the ability to recognize the intoxication of the organism with the diphtheria poison. In order to prevent misunderstanding, the author adds that he has treated of the scientific aspect of the diagnosis of diphtheria, and that he is not opposed to the practical measures taken when the Klebs-Löffler bacilli are discovered in the throats of patients. Those whose throats contain these bacilli frequently develop the disease later on, or else infect others with the disease, and for these reasons prophylactic measures are justified, without respect to the diagnosis of the primary disease or absence of disease in the throat, in which latter case the bacilli may be merely accidental parasites.

Treatment of Hydrocephalus.—A case of the chronic internal type is reported by H LÖWENBURG (*Am. Med.*, Aug. 6, 1904), which he treated by lumbar puncture. The child, about twenty months old, had from 50 to 60 c.c. of cerebrospinal fluid withdrawn by puncture once a week for a period of two months. The child improved mentally and physically and the head also became reduced in size. Death was finally due to pneumonia following measles. The writer considers that the following conditions must be present in each case before lumbar puncture can be practised: Free communication must exist between the ventricles and the subdural spinal space, which is shown by the fact that after the puncture, the fontanelle becomes scaphoid. The head must be compressible. The bones must be flexible and there must be no evidence of ossification in the fontanelle or the sutures. Ossification is usually well advanced after the second year, and, therefore, treatment must be instituted before this period. Lumbar puncture is preferable to direct tapping of the ventricles, as there is an entire absence of all danger of the untoward complications following the latter.

OBSTETRICS AND GYNECOLOGY.

Secondary Abdominal Pregnancy.—Two interesting cases are reported by F. PRUMANN, (*Zeitschr. f. Geb. u. Gyn.*, Vol. 52, No. 2). In one an intraligamentous pregnancy developed from the left tube,

which ruptured, but the fetus continued to develop in the abdominal cavity. When two weeks over time the woman was operated upon and a living child extracted. The placenta was adherent to and derived its nourishment from the intestines. The hemorrhage prohibited its removal and it was sewed into the abdominal wound. The woman died shortly after in collapse. The other case developed from an intestinal pregnancy in which a seven-months' fetus remained in the abdominal cavity for a year before operation. It had grown fast to the fundus uteri. The woman recovered. In this instance the fetus continued to grow, although the placenta remained at the original interstitial attachment.

Hemorrhage in Labor.—A sudden severe hemorrhage is the most alarming condition that the obstetrician has to meet. Accidental hemorrhage is due to premature separation of the normally implanted placenta. In considering its etiology, J. Rosenberg (*Am. Jour. Obstet.*, August, 1904), mentions exophthalmic goiter as a predisposing cause. Traumatism, emotion, hydramnios, multiple pregnancy and shortness of the cord may all produce premature separation of the placenta, but syphilis, nephritis and uterine tumors are the most important factors. The symptoms are those of shock from loss of blood, abdominal pain, abnormally large uterus, bulging and tenderness over the part corresponding to the placental site. The absence of placenta previa confirms the diagnosis. The prognosis for mother and child is bad in concealed hemorrhage; in external hemorrhage the mother's chances are better. The treatment should be rapid delivery. If the soft parts are dilatable, version, forceps or craniotomy may be resorted to. If the cervix is intact it may be incised or dilated with the fingers, metal dilators or Barnes' bag. "Conservative treatment" helps the woman bleed to death. A disease endometrium and uterine subinvolution predispose to placenta previa. The main symptom is hemorrhage, which is rare before the middle of the seventh month and may not appear before the end of pregnancy. The diagnosis depends upon the recognition of the spongy placental tissue. The treatment should aim to minimize the loss of blood and deliver in the interest of the mother. If the cervix is not dilated a firm gauze tamponade will usually arrest the bleeding and bring on labor pains. In marginal implantation, when the cervix will admit a finger, rupture of the membranes is advocated. A version should be done and a foot brought down out of the vulva; if the implantation is central and the hemorrhage profuse, the breech should be left in utero to act as a tampon and dilating wedge. A child should never be forcibly extracted through a partially dilated cervix. Postpartum hemorrhage may follow accidental hemorrhage and placenta pervia caused by uterine overdistention, general anemia and muscular relaxation. A hemorrhage before delivery of the placenta is due to a partially separated placenta usually ascribable to undue interference in the third stage of labor. The treatment consists in emptying the uterus by Credé's method, using the hand, if necessary. True post partum hemorrhage occurs after expulsion of the placenta and is due to atony of the uterine muscle. If the blood is bright red and the uterus contracted the source is a torn cervix, which should be repaired at once. If the uterus is large and buggy, the blood dark and clotted, the hemorrhage is from the placental site and calls for the following treatment: Massage of the uterus, injection of ergot, compression of the abdominal aorta, hot or cold intra-uterine douches with vinegar. If these measures fail, the uterus and cervix should be packed with gauze. Enteroclysis and hypodermoclysis should be resorted to, as may be necessary; intravenous infusion should be reserved for desperate cases. Raising the foot of the bed, auto-infusion, stimulants, hot cloths on chest and abdomen, ice-bag over uterus, all have value. Intra-uterine packing should be removed in twenty-four hours and followed by hot irrigations.

THERAPEUTICS.

Formaldehyde in Milk.—The germicidal action of this substance in milk and its gradual disappearance from the latter has been made the subject of an experimental study by D. Rivas (*Univ. Penn. Med. Bull.*, August, 1904). He found that small amounts (1:10,000 to 1:100,000) of formaldehyde added to the milk will gradually disappear from such milk in the course of twenty-four to thirty-six hours. This amount of formaldehyde exerts some detrimental influence upon the activities of the bacteria in the milk, as shown by the relatively lower bacterial content of such sample when compared with control samples. Samples of milk containing such small amounts of formaldehyde acidify more slowly, and do not coagulate as early as control samples. The fact that samples of market milk show unusually good keeping qualities and yet apparently do not contain formaldehyde, should at once raise suspicion that these samples may have had formaldehyde added to them, and that in time the formaldehyde has disappeared from such milk.

Therapeutic Value of Dreyer's Method of Phototherapy.—This is based on the assumption that the injection into the tissues of a solution of erythrosin renders them more sensitive to the action of the red rays and permits the latter to penetrate to a greater depth than ordinarily. B. Spiethof (*Berl. klin. Woch.*, July 18, 1904) reports the results of his clinical experience with this method in six cases of lupus, three of which had been treated rather unsuccessfully with the ordinary Finsen rays. The others had not been treated at all. He found that the reaction after exposure to the Finsen rays is much more intense where it has been preceded by an injection of the erythrosin than where this has been omitted. Animal experiments showed that the latter substance itself caused a reaction when used in 1 per cent. solution, although none was noticed with the use of the 0.25 per cent. solution. The effects obtained are therefore a combination of two factors—the rays and the erythrosin. The author had practically negative results with the method and no better effects were obtained in those cases where the injections were used than in those where they were omitted. He does not feel encouraged to ascribe much practical value to the procedure.

Treatment of Hemorrhoids.—According to D. Proebsting (*Zeitsch. f. klin. Med.*, Vol. 53) all the symptoms of piles are due to the fact that the lower rectum is never completely emptied, but that small masses of feces remain behind, which dry out to hard scybalous masses and set up a spasm of the sphincter. To avoid this spsam, 80 to 100 grams of cold water should be injected into the rectum after every defecation. When cold water is contra-indicated owing to bladder trouble, etc., lukewarm water may be employed. If the spasm and its concomitant symptoms, such as itching, are already present, lukewarm water should always be preferred, since cold water will increase the spasm.

Adrenalin in Hemophilia.—The admixture of this drug with ergotinine citrate has much to commend it. Ernest Francis (*Brit. Med. Jour.*, May 28, 1904) Chief

Medical Officer of Bengal Railway, recites the case of a male Hindoo Brahmin, thirty-two years of age, whom he was called to see for the purpose of controlling severe hemorrhage from the mouth, which having come on without apparent cause, had lasted for six hours. The patient presented the usual signs of partial exsanguination. The uvule was tremendously engorged 2½ inches in length and bleeding freely. Partly because of the necessity of hurrying as well as on account of the difficulty of getting a history from this wealthy high-class Hindoo, no delay was made, but the engorged organ was seized with the forceps and cut off. The patient died six days later from intestinal hemorrhage, but it is of interest to note that a hypodermic injection wound was immediately controlled by the use of adrenalin, and the hemorrhage from the wound in the pharynx, which because of the nature of the lesion was large, was also entirely stopped by the above-mentioned drugs.

Therapeutic Value of Lumbar Puncture.—Lumbar puncture is of great diagnostic value, for it will determine the presence of pus or of an excessive amount of serum, and it will also enable a bacteriological examination of the spinal contents. In therapeutics it is, however, more limited. T. WERTHEIMBER (*Münch. med. Woch.*, June 7, 1904) has seen the best results in serious meningitis, that peculiar disease of children, secondary to infectious diseases and characterized by hyperemia of the retina or choked disk, retention of urine, slow pulse and slight fever. Most cases will die suddenly after three to five months, unless the excessive cerebrospinal fluid is drawn off repeatedly. Recently good results have been seen in chlorosis; the severe headache and vomiting will stop here almost at once if 30 to 60 c.cm. of fluid are removed. The meningitis of children is also benefited and often cured.

Adrenalin in Pulmonary Hemorrhage.—It is well known that after the administration of this drug, the blood pressure increases. This increase is so considerable that it can readily be noted at the wrist. DUNCAN MACDONALD (*Brit. Med. Jour.*, May 28, 1904) recites the history of a case of a single male twenty-eight years of age, who four years ago developed the usual signs of pulmonary tuberculosis. After about four years he began to have severe hemorrhages, which were treated after the usual routine method. So far as the ultimate issue of the case goes, the adrenalin did no good, for fatal hemorrhage occurred one week after its administration was commenced. It did not, however, interfere with digestion, and if it did no good, it is certainly safe to assert that it did no harm.

Treatment of Hemorrhoids by Oscillatory Currents of High Tension.—The widely recognized fact that malignant change and growth is apt to take place as a result of chronic low-grade inflammation lends to the minor ills of the rectum an importance which they had not previously attained. T. J. BOKENHAM (*Lancet*, July 2, 1904) recites his experiences of Doumer's method for treating hemorrhoids and fissures by high-frequency currents. He cites that the method is quickly successful in healing fissures. It is valuable in relieving pruritis ani. It is also valuable in the treatment of internal and external hemorrhoids, particularly in their early stages, where extensive thickening has not taken place. The author has used it in over 100 cases of rectal lesions. The exact form of the electrode is probably of very small importance, the point being that it must be long enough to pass through both sphincters and with such diameter that its surface will touch every area of the parts. A vacuum electrode of such high vacuum that there are produced in it abundant X-rays is less unpleasant to the patient and has less therapeutic action. The duration of each application should be about fifteen minutes, and in many cases five minutes is better. The results leave much to be desired in the matter of effecting permanent cures, but they are probably, in the opinion of the author, superior to any other form of treatment except operation.

Sinusoidal Current and Circulatory Organs.—It has been alleged that fresh-water baths, through which the sinusoidal alternating electric current is conducted, have proved of value in cases of cardiac debility and have cured cases of dilatation with muscular weakness. PAUL C. FRANGE (*Dublin Jour. Med. Sci.*, July, 1904) has investigated the action of such baths on the volume and frequency of the pulse, the outline of the heart and on blood pressure. On an average the pulse rate decreased after the bath by five beats per minute, the blood pressure increased by 8 mm. of mercury. In some cases a single electric bath was sufficient to remove a certain amount of cardiac dilatation. Such baths were recommended as a valuable adjunct to, but not in lieu of, the effervescent brine baths of Nauheim.

Alkaloids of Jaborandi.—A research into the physiological action of the alkaloids contained in jaborandi leaves was made by C. R. MARSHALL (*Jour. of Physiol.*, May 3, 1904) with the following results: Jaborandi leaves contain three alkaloids—pilocarpine, isopilocarpine and pilocarpine. Isopilocarpine only occurs in small quantities, and pilocarpine only in small amounts in *Pilocarpus jaborandi Holmes*. No substance corresponding to jaborini has been found in the leaves, either chemically or physiologically; but a substance possessing an atropine-like action is present in the jaborine of Merch, which, however, consists mainly of pilocarpine or isopilocarpine. Pilocarpine eats up the so-called nerve-endings in the heart, and its action is comparable in nearly all points with that obtained by electrical stimulation of the vagus. A small dose of atropine is able to counteract for a definite time an excessive amount of pilocarpine. Small doses of pilocarpine increase the sensitiveness of the vagus to electrical stimulation. Large doses, if injected during electrical stimulation of the vagus, are practically without action. The antagonism of pilocarpine and antropine is physiological. Isopilocarpine acts like a weak pilocarpine. In efficient doses it is about six times weaker. In large doses it is about twenty times weaker. Pilocarpidine is still weaker than isopilocarpine. The homopilopic portion of the pilocarpine molecule acts at least as an interacting to haptophore group. Solutions containing the hydroxy-acid corresponding to the lactone-pilocarpine are inactive. The influence of the glyoscaline part of the molecule has not yet been determined.

Action of Strophanthus.—In summing up the pharmacological action of strophanthus, G. GÜNTHER (*Therap. Monatshft*, June, 1904) states that this drug is a pure heart-muscle poison, which kills by bringing about diastolic cessation of heart-action. Intoxication gives rise to characteristic changes in pulse and blood-pressure which differ from those caused by digitalis, mainly in the absence of vagus irritation. Strophanthus also brings about vascular contraction, but less so than digitalis, and it seems to have a specific action upon the vomiting center. The only antidote is artificial respiration; neither morphine nor chloralhydrate possess any efficacy.

Maretin, A New Antipyretic.—Very favorable reports on maretin, as an antipyretic in the fever of consumptives, is contained in a short article by D. ELKAN (*Münch. med. Woch.*, July 26, 1904). He finds that the drug depresses the temperature slowly without causing collapse or excessive perspiration and without in any way influencing respiration,

digestion or circulation. Bad after-effects or cumulative action were never observed. The drug is cheaper than pyramidon and may be given in doses of 0.5 grams once daily, or half this amount twice daily. It is only slightly soluble in the usual solvents.

Morphine in Heart Disease.—There is no reason to look upon morphine in its usual therapeutic doses as heart-poison and to consider it contra-indicated where a heart lesion is present. K. Grassmann (*Münch. med. Woch.*, November 28, 1904), states that sudden death may occur after the use of morphine, but that this is just as unavoidable as collapse in chloroform necrosin. Great care is, however, necessary where respiratory complications exist, especially if these are acute, and also in acute processes of the endo and myocardium. Morphine can be employed without fear in purely nervous disturbances, especially in nervous angina pectoris and in organic angina small doses are indicated. The drug should never be withheld in chronic cardiac dyspnea, and in excited and sleepless patients it plays an important rôle as sedative before digitalis is begun.

NEUROLOGY AND PSYCHIATRY.

The Neuron Theory.—Recent research has shown, according to A. Bethe (*Deut. med. Woch.*, August 11, 1904), that the neuron theory, as first advanced, no longer holds. There are certain facts which have been contradicted and considerable doubt exists regarding the validity of others. It is now stated that the neuron can no longer be looked upon as cell unit, because the latter embryological and historical findings show that at least the axis cylinder processes of peripheral nerves are of multicellular origin. The demonstration of autogenous regeneration has apparently also confirmed this view. It is likely that, in addition to the neuron complexes, there are other nerve elements which are independent of the former. In every nerve plexus, in both vertebrate and invertebrate animals, the cells are connected by well marked anastomoses. In the central nervous system of snails and crustaceans, fibrillary connections between distinct neurons have been demonstrated with certainty. In vertebrates such relations have not been fully proved, but there is sufficient at hand to warrant the belief that they are probably present. Bethe claims that the neurons do not represent trophic, or even functional units. He thinks that the name may be retained and applied to the complex of ganglion cell, dendrites and cylinder process, as it furnishes an excellent conception for a teaching scheme.

The Social Causes of Alcoholism.—A statistical study of the various social causes of alcoholism was made by W. C. Sullivan (*Jour. of Mental Sci.*, July, 1904). It is necessary to distinguish two opposed types of drinking, namely, the drinking associated with conditions of relative luxury (convivial drinking), and the drinking associated with conditions of relative misery, the result of bad industrial circumstances. Convivial drinking often leads to drunkenness, but does not tend very much to chronic alcoholism. Industrial drinking, while leading also, though less immediately, to drunkenness, tends rapidly and fatally to chronic intoxication. From a statistical point of view, while chronic alcoholism always implies the existence of drunkenness, the latter by no means implies the existence of chronic alcoholism. In England this divergence is best seen in the prosperous mining districts, which by reason of their prosperity are at once more drunken, but less alcoholic, than any other part of the country. The graver social evils that are in any important degree caused by alcohol are related to the chronic intoxication, and are, therefore, mainly due to industrial drinking. While educational, religious and similar influences can control the excesses of convivial drinking, they have but little action on industrial alcoholism, which can only be checked by raising the standard of living, and, in a minor degree, by such methods as restricting the facilities for obtaining alcohol during work hours, providing hygienic substitutes, and so forth.

SURGERY.

Clinical Experience with Renal Decapsulation.—This method of treating certain cases of Bright's disease, as suggested by Edebohls, was tried by P. Rosenstein (*Deut. med. Woch.*, July 28, 1904), in a series of six cases. The general result was unsatisfactory. One patient died from the operation, one grew worse, two were not influenced at all, and the remaining two showed some improvement. Rosenstein believes that the favorable results secured by Edebohls were due to the fact that these were not true cases of nephritis, but were merely inflammatory processes brought about by an abnormal mobility of the kidney. Moreover, among the cases reported by Edebohls were nine which were designated as presenting a unilateral Bright's, which, Rosenstein claims, does not exist, but that the process is always bilateral. The mortality which attends renal decapsulation 26 per cent. is considered by Rosenstein to label the operation as a very dangerous one. He affirms that cure has not resulted in an undoubted case of Bright's from this operation. The following improvements were noted in his two cases: Objectively, in one the slight edema disappeared, but there was no change in the albuminuria; subjectively, in another case, the headache and visual symptoms which were present before operation disappeared.

Fibromyxosarcoma of the Sacrum Treated by Cataphoresis.—The patient, a woman of twent-six years, presented a hard growth in the posterior portion of the pelvis, for which operation had been attempted and given up. There was a history of two difficult labors previous to the appearance of the tumor. G. B. Massey (*Am. Med.*, August 27, 1904) reports the case and the result of his method of treatment. The patient was anesthetized and placed on a negative pad on a cot. An incision was made over the upper part of the coccyx and a sharp pointed zinc-mercury electrode was introduced and thrust through the healthy tissues about the coccyx into the tumor, so as to avoid injuring the sphincter ani. A current of 1,600 milliampères was slowly turned on, which developed the ionized chemicals by electrolytic destruction of the anode and dispersed them radically from the electrode, thus necrosing and sterilizing an increased area of skin, subcutaneous tissue and malignant growth. The current was used for three hours, and the necrotic area covered three inches. Twenty-one days later three of the coccygeal bones and one-half of the tumor sloughed out through the opening. A second application was made a month later, 1,200 milliampères being applied for two hours, and sixteen days later the remainder of the mass came away, followed by the rest of the coccyx. The patient made a good recovery, and seven months after operation presented a useful rectum and only a small sinus. The histological examination showed the tumor to be a fibromyxosarcoma.

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SATURDAY, SEPTEMBER 17, 1904.

AN OUNCE OF PREVENTION AND THE POUND OF CURE.

THE echoes of the requisition for a hundred thousand square yards of wire gauze mosquito netting, by the Commissioners of the Panama Canal, are still reverberating through the daily press. And yet a million square yards would not be too much (as Dixey said about the tidies), for mosquito netting, when we consider what great practical good its use will accomplish. For the bed of the forty-seven miles of the projected canal will be scarcely a bed of roses, while the canal itself will resemble anything but the beauteous stream that meandered through the Garden of Eden. Now, if any one thing has been definitely proved by the experiments of late years it is that both malaria and yellow fever are disseminated through the agency of mosquitoes, and the voices of both the *Stegomyia fasciata* and the *Anopheles* are particularly loud in that particular land. There will be, of course, much excavation of fresh earth, and in the rainy season the results will be the formation of innumerable marshy pools where the mosquitoes will propagate in vast numbers and then carry the seeds of these diseases from one encampment to another.

That the death rate will be enormous under any circumstances is evident, and any efforts of those in charge of the undertaking to lessen it from the fearful height that it attained under the régime of de Lesseps, should be applauded and encouraged by the press and not be hampered and curtailed by the cry of petty economy, or ridiculed from that crass want of knowledge that seems to be characteristic of the daily newspaper when dealing with scientific subjects.

There are already some dozens of barracks built by the former company within easy distance of each other along the banks of the proposed canal, and it is now the intention of those in charge to protect all the windows and doors of these quarters with netting, and to see particularly that the latrines of the men are so guarded that the mosquitoes will be unable to enter. In order to accomplish this the gauze is to completely envelop the entire structure, as one house might be built within another. As to the laborers themselves, it is more than a difficult problem to handle. The last lot were the veriest scum of the earth; the refuse of all nations, worn and broken down by ill-health. Racked by fever and dissipation they would have been vile by comparison with much more pleasing prospects than can be found anywhere on the Isthmus of Panama. Always mutinous, constantly fighting with each other, and endowed with that cheerful feeling of hostility toward strangers, that was so characteristic of the early days of Marblehead and which is now pathognomonic of Port Said, the wonder is, not that they died hourly, but that the majority of them succeeded in living at all.

The only possible solution of the problem would be the introduction of the Chinese coolie, who is the very best type of laborer for that particular form of work, that the world has ever produced. But the immigration laws in regard to the Mongolian are very strict, as the American workingman, and through him his Congressman, prefer to be ruined by anything rather than "Chinese cheap labor," and any efforts to influence Congress on the eve of a general election would be more than futile. They might, it is true, be landed in Mexico, which is still open to the Chinese, or be imported at the other end of the canal at Panama, but the labor unions have discovered this and the cry has already been raised that the canal strip is American territory, under the American flag, so that the labor-seeking spade of poor John will hardly turn the soil of "an

earthy to-day, nor yet of a dusty to-morrow." All this does not seem to hold out much hope for a great improvement in the personnel of the laboring force, and the reign of the beach-comber and cutthroat of the past will probably, like history, repeat itself, but with the sanitary restrictions, discipline and improved commissariat of the United States Government behind them it will certainly be in the power of the Commissioners to greatly ameliorate the condition of the working gangs.

Then, too, there is no cloud without its silver lining and the darkest hour is followed by the rising dawn, so that the proposition of Mr. William Growley, of Toledo, will not only add strength to the hearts of those delving in the Isthmian wilds, but will carry balm and comfort to the cherished ones at home. For with it comes the assurance that they will again behold the faces that they knew and loved, and that the grave has been robbed by him of its victim, while death itself has lost its sting. That Mr. Growley will be able to accomplish all that his friend Mr. Calloway states in his behalf we have no doubt. There is a certain straightforward-businesslike method in his communication, that is calculated to inspire confidence in his mercantile integrity, and though his postscript perhaps smacks overmuch of "graft," yet a great deal can be excused in the enthusiasm of a friend, which may not be politic, but is undoubtedly sincere. The letter, which was delivered to a newspaper correspondent, supposed to be in touch with the members of the Commission, is as follows:

Dear Jimmy: This will be presented to you by my old friend William Growley. We call him "Bill" here in Toledo and I want you to go to the front and hustle for him. Perhaps you remember Bill's place in Summit Street? He has a good business in the undertaking line and desires to extend it. In other words, Growley thinks that there is a chance for him on the Isthmus. He has heard that men die there by the hundred every day. What he wants is the contract to bury those who fall by the wayside, so to speak. I heard you speak of Admiral Walker when you were here last summer and I told Bill that you were just the chap to help him, and I know you will—for my sake. Go to the front, old man, and see if you can't land this contract for Growley. He is a good fellow every way and can get all the necessary testimonials.

The boys here are all well and join me in sending you our best wishes. Yours, as ever,

Jack Calloway.

P. S.—Growley is an A1 embalmer, and, if he gets the contract, will fix up the friends of the Commission who happen to die on the Isthmus in bully shape to send home. J. C.

To all of this we can only say "Amen." J. C. is evidently not an angel, as he has butted in where they proverbially fear to tread. But while we wish him well, we most sincerely trust that if his friend secures the contract that he will not be called on to return his favors professionally to the members of the Commission. They are, as a rule, portly dignified gentlemen, who have not for many years traveled on their "shape." So we earnestly hope that the only necessity they will encounter for "cracked ice" and "preserving fluid" will be that little, which St. Timothy teaches us, it is well to use for the stomach's sake. As to Mr. Growley, personally we know him not, beyond his name, which seems to indicate that God is good to him, but from his enterprise and push we are inclined to believe that he must be a lineal descendant from that good old Irish paragon, of whom Florence, the comedian, used to sing to us, so many years ago: "Begorra! Mister Growley, you're a d—d foine man."

HEPATIC DISEASE IN PREGNANCY.

One of the most interesting recent developments in that practically universal specialty of obstetrics is the recognition of the fact that pregnancy seems to throw a special strain on the liver, which is not always well borne. It has been the custom to talk overmuch of kidney affections in the course of pregnancy. Some of these have been supposed to be merely functional, due to the extra work thrown upon the kidneys of performing the excretory function for two beings, especially under the unfavorable conditions of increased intra-abdominal pressure with consequent disturbance of circulation. These affections were thought to be completely recovered from, in most cases, and the significance of albumin during pregnancy has been one of the disputed points in urinary diseases. It has been recognized that if true kidney disease existed before pregnancy began there was serious danger of an exacerbation of the affection, with resultant damage to the organs and often a fatal result. In general, however, too much emphasis has been thrown upon renal disorder as the basis of many pathological conditions during pregnancy, for which no other adequate cause was apparent. It has been easy to make the kidney responsible and thus medical ignorance has been cloaked and unfortunately medical curiosity satisfied by expressions such as "the kidney of pregnancy," "renal congestion in pregnancy," and the like, where no direct connection between these conditions and the kidneys was traceable.

As the result of recent investigations the liver is to be made to share its burden of responsibility for serious health disturbances during pregnancy. The recognition twenty-five years ago of acute yellow atrophy of the liver as an accompaniment of pregnancy and the study of this disease threw some light on an important subject, but, unfortunately, it was concluded that this condition was very rare and therefore need not be much considered. In its extreme form there is no doubt that it is rare. In milder forms, however, it is probable that it exists much more frequently than has been thought and recent autopsies, both in Europe and America, show that certain cases of eclampsia, as well as cases of pernicious vomiting, which have proved fatal, exhibit degenerations of the liver substance not unlike the pathological changes in acute yellow atrophy.

The pathological picture which is nearest that of acute yellow atrophy is found in phosphorus poisoning. It is well known that this is due to the absorption of phosphorus into the circulation and its direct transportation through the portal system to the liver where it produces extensive fatty degeneration. If this fatty degeneration has continued for some days, there is an absorption of fatty material with a lessening of the size of the liver and the picture then resembles very closely that characteristic of acute yellow atrophy. Whether there is some extremely irritant substance absorbed from the digestive tract in the course of certain pregnancies which produces this tendency to fatty degeneration in the liver remains to be proved. It would seem, however, that the digestive tract must be held primarily responsible. The fact that pernicious vomiting should be one of the clinical manifestations of this hitherto unassociated group of affections appears to confirm the suspicion of digestive disturbance and the absorption of toxic substances from the digestive tract as a principal element in the etiology of these conditions.

It would not be strange if the carrying of certain of these intensely toxic substances to the kidneys should produce at least a functional derangement of their secretion. Phosphorus has almost as severe an action on the kidney as it has upon the liver. Even though the irritation were milder than that produced by phosphorus, the presence of albumin in the urine, of a certain amount of blood and of casts covered with cellular detritus would be within the boundaries of rational anticipation. It has been well recognized for some time that no dependence could be placed on any indications of the approaching development of eclampsia that might be derived from the amount of albumin in the urine. In fact, the whole etiology of eclampsia, notwithstanding all the work that has been devoted to it, has remained shrouded in obscurity. It is to be hoped that the present line of investigation will prove more fruitful of lasting results than have previous studies. It is extremely suggestive to find that a number of conditions in pregnancy, hitherto thought to be quite unrelated, are perhaps due to modifications of the same set of pathological changes and that all of them are associated with digestive disturbances rather than with intractable organic lesions.

THE URINARY DISTURBANCES IN LOCOMOTOR ATAXIA.

The victims of tabes dorsalis are frequently subject to bladder disturbances; these commence and evolute silently and the ultimate outcome is distention of the bladder. This subject has been ably discussed in a paper by Desoros, read at the Société de Thérapeutique de Paris, February 24, 1904.

An early diagnosis is of the greatest necessity in these cases. The first symptom is a peculiar *hesitation* at the commencement of micturition. It is a kind of timidity of the bladder, a urinary stuttering, which begins by the passage of a few drops of urine, then ceases, and afterward begins again. The jet may retain its full strength for a considerable time, but at last the urine falls vertically to the ground, drop by drop.

Beside these common symptoms, two others of much greater diagnostic weight enter upon the scene; (1) sudden arrest of the flow without giving rise to any pain to the patient or to that sensation of contact so readily perceived in cases of calculous obstruction; (2) the impossibility to expel the urine, which effort is followed by an involuntary evacuation. The patient cannot micturate when he desires and he voids urine when he does not wish, and he is surprised to find his clothes suddenly wet.

Sensory phenomena then follow. Shooting pain in the region of the bladder, extending down the penis or urethra, is not uncommon, but attacks of cystalgia and vesical neuralgia of great intensity occur, being increased by micturition, which in its turn is made more frequent from these attacks.

In other cases, which are the most usual, the patient complains of a vague sensation, with frequent and impeded micturition and finally pain. All this is simply the ordinary clinical picture of an irritable bladder, which is met with in the beginning of tuberculous cystitis just as in ataxia.

Incontinence of urine is the symptom which most forcibly attracts the patient's attention and is due to irritability of the bladder; it should be considered as a false incontinence because it is produced by frequent and imperious desire to empty the bladder. The patient is unexpectedly seized and not having the time to control himself, the act is accomplished in his clothes.

In other cases the incontinence is caused by a paralysis of the sphincter, and, as has been pointed out, it may follow fruitless efforts at micturition. In the majority of cases, however, there is another cause, namely, incontinence by retention, and patients may very rapidly reach this stage.

To make a diagnosis, one should take locomotor ataxia into consideration in the first place, for it is quite frequent to see the urinary apparatus attacked the first of all, and it may present the only symptoms for some time. A general examination of the patient will give one the key to the situation and, as far as local examination goes, palpation of the hypogastrium and digital exploration of the rectum will suffice, which allows one to appreciate the condition of the prostate and to map out the distention of the bladder. The catheter should only be used as a last resort, because the bladder in ataxia is far more readily infected than a normal one.

The urinary disturbances of tabes are usually mistaken for those set up by urethral stricture or hypertrophy of the prostate, as well as cystitis and infections of the bladder. The condition of the urine, the use of the bougie à boule, which shows the condition of the urethra without entering the prostatic portion or the bladder, the advanced age of prostatic subjects, the increase of the symptoms at night, etc., will settle all doubt as to the nature of the affection as far as the prostate is concerned.

A mercurial treatment should be begun at the same time as the local treatment. The latter has two indications to fulfill, namely to prevent retention from taking place at the commencement and at a later date to prevent ascending lesions. If the bladder empties itself the catheter should not be employed, but when this is not the case the urine should be drawn off at regular intervals and asepsis must be absolutely perfect, especially when the bladder is distended and presents a soil in every way prepared for infection. The urine should be drawn slowly, as when dealing with prostatic enlargement, because this is the best way of preventing the occurrence of severe hemorrhage, which might otherwise arise.

If the bladder is primarily infected, or should it become so, a few irrigations with one of the ordinary antiseptics are indicated, but, above all, one must be sure to empty the bladder first.

When the treatment is well conducted, not only will the retention diminish, but the bladder is quite susceptible of regaining a certain degree of contractility. Intravesical electrization is of little value and is very prone to produce a hyperemia of the bladder walls, a condition that should always be avoided.

ECHOES AND NEWS.

NEW YORK.

Dr. Cabot's Appointment.—Dr. Follen Cabot, Jr., has been appointed Visiting Surgeon to the City (Charity) Hospital, New York. He will assume the duties of his position in the near future.

Typhoid Situation.—The Department of Health reports 146 cases of typhoid fever for the week ending September 10, with 21 resulting deaths.

Inspector of Contagious Diseases in the Bronx.—Commissioner Darlington has announced the creation of the office of Chief Inspector of Contagious Diseases in the Bronx, which will be filled by Dr. Charles F. Spencer, of 1124 Tinton Avenue. The Commissioner said that on account of the rapid increase of population above the Harlem the work had increased so that the present Sanitary Inspector was unable to keep up with it. The new office will be at the headquarters of the Health Department, One Hundred and Sixty-eighth Street and Franklin Avenue.

War on Trachoma.—With the opening of the public schools the Department of Health will renew its active struggle against trachoma. Inspectors will visit every building and every room as soon as possible after the regular work begins, and the eyes of every child will be examined for traces of the disease, which is gradually beginning to give way under the continued assaults of the department. Children suffering from trachoma will be kept from school until they have undergone an operation or had appropriate treatment. The department will perform the necessary operation and administer treatment without charge. A certificate from any reputable physician that a child has begun treatment will obtain readmission. The school children who are to undergo operation will have to wait their turn at the new trachoma hospital the department has opened at West One Hundred and Sixteenth Street and Pleasant Avenue. From five to six operations a day is the capacity of the hospital. Treatment will be given at this place and at a small building on the grounds of Gouverneur Hospital, on the East Side. It is believed that this inspection will show a great falling off in the number of trachoma cases. After the

schools are well settled and the trachoma examination completed, it is proposed to test the eyes of the school children for defective vision.

The Physical Test.—Grand Chief Warren S. Stone, of the National Brotherhood of Locomotive Engineers, has not let one thing be forgotten. Recently he was quoted as saying: "There was some talk, too, over the physical examinations the men don't like. We object to the present system, the standard railway test, and want the practical test—that is, we want men to be subjected on a railroad to the test of color. Let a man be taken out in the open and asked to test colors and semaphores. Men can do that and stand the test who couldn't arrange a skein of sixteen bits of yarn from light to dark. But that will be fixed up by the arrangement in the future. The "standard railway test" to find out whether a man is color blind was designed by expert oculists as the safest and surest method of getting at the truth about a man's eyesight. It is a hard and rigid examination, but it is no harder, no more rigid, than the importance of the subject demands. It is practically impossible for a person afflicted with color blindness to pass it. And in this lies its virtue. The "practical test" which Mr. Stone advocates is one that might possibly be passed by an unscrupulous person conscious of his inability to distinguish colors and shades. This is the weakness of the "practical test." Upon the ability of the motormen to distinguish promptly the signals set for their guidance depend the safety and the lives of the passengers.

Carbolic Acid Sale Stopped.—At the conclusion of the regular meeting of the Board of Health September 8, Commissioner Darlington announced that the following amendment had been made to the Sanitary Code: "No phenol, commonly known as carbolic acid, shall be sold at retail by any person in the City of New York, except on a prescription of physician, when in a stronger solution than 5 per cent." The action of the Board of Health in adopting an ordinance to check the sale of carbolic acid cannot be called timely. Such an ordinance should have been put in force years ago, when the ease with which would-be suicides could obtain the poison now proscribed was first pointed out in the newspapers. Tardiness of adoption, however, has not destroyed the wisdom in the law, and enforcement should be earnest and unremitting. Death by the carbolic acid method is painful beyond ready description. But this fact has usually made its appeal too late. Desperation has driven its victims to the cheapest and most available means of self-destruction, and it has come to pass that nearly half the suicides in New York City are accomplished by the deadly phenol. The carbolic acid route out of the world has particularly attracted women and girls. There is reason to believe this law will do more than drive the despairing to other means of self-killing. It will cause in many a case such delay in the execution of an ill-judged determination as will bring a sane and saving second thought to the fore.

Fixing the Blame.—Apropos of the epidemic of typhoid fever now raging in the Bronx most lay, and not a few medical, journals have found material for interesting though not always thoroughly understandable editorials. The old saw about an ill wind, etc., is doubtless true enough, but usually the wind is traveling at a hurricane rate in some quarter or other unchecked by physical laws that are ordinarily in operation. A typhoid epidemic may stimulate thought and engender the expression of more or less valuable opinion, but it is unfortunately a big price to pay for the senseless mouthings of those who are entirely ignorant of the circumstances attendant upon its origin and propagation. Probably no city approaching even one-half the size of New York, has a health board composed of men so well trained for their work or so conscientious in having that work carried out, and while the Board has not been openly condemned, disparaging remarks have been made. New York is a difficult city to manage because of its distinctly cosmopolitan type—education in matters sanitary must always be nearly a hopeless task when one has to deal with semi-barbarous illiterates from the mountains of Italy and other countries of the Old World, and no end of rules and regulations can rid them of filthy habits acquired through long years of groveling existence on their native soil. Some daily journals have even gone so far as to calculate the money cost of the scourge and have compared these figures with the astonishingly small cost of prophylaxis, assuming to know, of course, just how much in dollars and cents it really does cost to keep a colony of Italians *in statu quo*. It is a great mistake, to suppose that because we have fire companies there ought to be no fires, and because we have police patrol there ought to be no night brawls, and because we attempt to prevent disease no disease should exist. In spite of all precautions we are likely to have a severe outbreak of some disease or other at any time.

PHILADELPHIA.

Woman's Medical College.—This college is to have its own hospital for teaching purposes instead of using the Woman's Hospital which adjoins the institution. The separation has grown out of the refusal of the hospital to accept as one of its staff a youthful professor appointed last year by the college.

Texas Cattle Fever in Pennsylvania.—An outbreak of this fever has recently occurred among the cattle in the vicinity of Lancaster. The disease was brought from the south and spread by a car of cattle not labeled as coming from the infected district. State officials have the disease in check.

Home Study Hours Lessened.—The public school studies have undergone a revision lasting more than a year, and this is now complete with the exception of physiology which is soon to be added to the list. One of the main objects of the revision was to lessen the amount of home study required, this having become a serious complaint of the parents.

To Honor Dr. Chapin.—It is proposed to give Dr. John B. Chapin, Superintendent of the Pennsylvania Hospital for the Insane, Philadelphia, a dinner in October next, in honor of his half-century's work in behalf of the insane. Those desiring to participate in the function should correspond with Dr. Edward N. Brush, Superintendent of The Sheppard and Enoch Pratt Hospital, Towson, Md.

CHICAGO.

Opening of Swedish Hospital.—The new Washington Park Swedish Hospital, at Sixtieth Street and Vincennes Avenue, was recently dedicated, the dedicatory exercises being under the auspices of the Sophia Aid Society. Ten patients already are in the hospital. The building was completed August 25. The institution has accommodations for fifty patients. The founders believe the institution will grow rapidly. Dr. O. C. Young is the head physician. The staff is composed of Drs. John B. Murphy, Frank Billings, Archibald Church, William A. Evans and A. Hakanson. The operating room is equipped with all modern appliances.

Nervousness in School Children.—According to Dr. C. C. Krauskopf, assistant supervisor of the child study department of public schools of this city, it is estimated that one in every three of the school children is a victim of some form of nervousness. This is the finding of public school pedagogues after observations extending more than a year. The prevalence of nervous disorders among children is attributed to strenuous city life; impure city atmosphere; the bringing up of children in flat buildings; no relief from noise, day or night; lack of proper nutrition; late hours permitted by parents, and residence along cable and trolley car lines. The finding is based on statistics collected in every part of the city. Of the three hundred pupils examined by the child study department of the school board during the last year, a large majority of the defectives were found to be sufferers from nervous affections. The nervous affections usually took one of two forms: Sluggishness and mental depression, with tendencies toward melancholia, or uncontrollable nervous twitchings. In a great many of the cases nervousness is directly traceable to lack of proper food, accompanied by poor air to breathe, life in flat buildings, noise day and night, etc. It has become a recognized fact that everything possible must be done in the public schools to counteract the nervous effect of city life. A public school principal, who has made a careful investigation of the subject and intends to publish a monograph showing the effect of city life on the child, declared that parents have no conception of the appalling increase of nervous complaints among children.

Teachers in Good Physical Condition.—Of the 171 teachers examined by the child study department during the last vacation period, only six failed to pass the physical examination.

Donation for St. Luke's Hospital.—According to the will of the late Mrs. J. H. McVicker, $10,000 will be donated to this institution.

Mortality for the Week Ended September 3.—According to the Bulletin of the Health Department, for the week ended September 3, there were reported 491 deaths, 19 more than in the previous week, making an annual mortality rate of 13.27 per 1,000. Violence caused 69 deaths; acute intestinal diseases, 86; consumption, 61; and heart diseases, 32.

GENERAL.

Georgia Tuberculosis Commission.—Governor J. M. Terrell, of Georgia, has appointed a medical commission to investigate the extent of tuberculosis in Georgia and means of stamping out the disease. This is the first commission of the sort instituted in the South, and was created by an act of the General Assembly approved in August. The commission will cooperate with the State board of health and doubtless, also, with a committee on tuberculosis appointed some time ago by the State Medical Association. Dr. Charles Hicks, of Dublin, is chairman.

The Auto or the Horse—Is Either Safe?—Dr. F. W. Dalrymple, a prominent physician of New Rochelle, N. Y., was thrown from his buggy in a runaway accident and had his collarbone broken and head badly bruised.

Dr. Russel G. Andrew, Jr., a Coroner of Monmouth County, and a practising physician at Highlands, N. J., was seriously, if not fatally, injured on the same date, while returning from a visit to a patient at Sandy Hook. A private motor car, in which Dr. Andrew was riding at the rate of twenty-five miles an hour, jumped the rails opposite The Cedars on Sandy Hook. Dr. Andrew was thrown with terrific force to the ground. He was taken unconscious to his home an hour later, where his father, Dr. R. G. Andrew, Sr., a physician of Navesink, was summoned. Dr. Andrew found that his son had sustained a compound fracture of the right leg, was suffering from severe bruises on the head and hips, and probable internal injuries.

Chill Room Cure for Lockjaw.—A ten-year-old boy is battling for his life against a severe attack of tetanus in the big chill room of the Jetter brewery in South Omaha, Neb. When convulsions came on and the boy's condition grew worse the parents were prevailed upon to permit the boy to be taken to the chill room in the brewery. His condition improved immediately, but he objected to lying in the chill room and was taken back to his home. There the convulsions returned and the boy was taken back to the chill room. Within one hour after he was taken there the severity of the convulsions had been greatly reduced and the patient was able to straighten out his legs. Two days later the convulsions disappeared entirely and the boy was able to open his mouth and take nourishment. The physicians say that he will recover and that the new chill-room treatment will have saved his life.

The Cocaine Danger.—Not wholly a subject for cheerfulness are certain figures, just published in Brussels, which show an enormous increase in the output of coca leaves and in the manufacture therefrom of the alkaloid called cocaine. The raw material comes from Peru, and exports of it from that country have more than doubled since 1899. Last year they amounted to something like 1,300,000 pounds, the bulk of the product being gathered by Indians from the wild plants in the forests. Cocaine, of course, is of great usefulness in medicine, but it is being dangerously misused. Many makers of patent medicines are utilizing it on a large scale. It enters into the composition of numerous catarrh remedies, and is the active ingredient of a variety of nostrums which deaden pain by the simple process of reducing the sensibility of the nerves. The relief it gives in cases of irritation of the nasal passages is due to its property of contracting the smaller blood-vessels in the mucous membrane. People take these medicines without knowing that they contain cocaine, are relieved by them temporarily, and acquire a habit for the drug, which is quite as bad as morphine, being not less destructive to the nervous system. It is an excellent illustration of the fact that proprietary remedies which contain powerful toxic agents ought to be labeled with a suitable warning, under compulsion by the law. This is done in European countries, and any evasion of the regulation is punished with severe penalties.

When Vacation is Over.—In many of the cases where a family return home from their long summer outing apparently in the best of health, only to succumb to illness soon after, the family doctor lays all the blame on the water or sanitary conditions of the summer home, and sometimes quite unjustly, says a writer in *Harper's Bazaar*. Undoubtedly many country places are most unsanitary, but often it is the town house which is responsible for the low fevers and so-called "malaria" that attack us in the autumn. Where it is a possible thing no housewife should think of moving her family into winter quarters until the house has been aired at least a week. No water should be used from the taps (except for washing) until it has been allowed to run a couple of hours and the pipes are thoroughly cleared of the summer accumulations. It is also an excellent precaution to pour boiling water mixed with chloride of lime down each escape pipe and all toilet closets. The proportion of the mixture should be a heaping teaspoonful of lime to a quart of boiling water. The empty and long disused icebox or refrigerator should come in for a most thorough overhauling before

a particle of food is put into it. If the shelves are movable, as they should be, take them out and boil them thoroughly in the clothes boiler. Wash out all the inside of the box with as hot water as can be handled. Be especially careful to see that the little pipe at the bottom, which takes away the water from the melting ice, is absolutely clean and sweet. In our rather damp climate beds which have been unused for some time should be most carefully looked after, dried, and aired thoroughly before being again occupied. The cellar should come in for careful inspection, and be given all the air its small windows will allow. If it has a close, mouldy smell on being first opened a coat of whitewash will be found an excellent and inexpensive disinfectant.

Radium Rays and Diphtheria.—Considerable attention has been drawn to the therapeutic effects of radium and naturally much interest attaches to experiments in this field. The claim has been made that exposure for forty-eight hours to radium rays would prove fatal to typhoid-fever bacilli when placed close to the source of rays, while anthrax spores and lower organisms of various kinds have similarly been destroyed. Recently a series of careful experiments, made at the biological laboratories of the Massachusetts Institute of Technology, by Professor S. C. Prescott, seem to show that exposures of less than ninety minutes to radium rays have no destructive effect in the case of the intestinal bacillus (*Bacillus coli*) and the bacillus of diphtheria (*Bacillus diphtheriæ*), and also in the case of the bacteria of domesticated yeast (*Saccharomyces cerevisiæ*). The importance of these experiments is that they were performed with three varieties of bacteria essentially different, and the time conditions were such as would be encountered in using practically the radium rays as a germicide. Naturally the experiments with the diphtheria bacillus are of the greatest general interest, as it has been asserted that radium enclosed in a certain form of capsule and inserted in the throat of the patient would effectively destroy the organisms of the disease, and it has been suggested that for the cure of diphtheria radium might prove as effective as antitoxin. In these experiments no evidence was obtained which would indicate any possibility of the successful treating of diphtheria by destroying with the rays from radium the specific micro-organisms of the disease, and Dr. Prescott states as a conclusion that the use of radium tubes for this purpose cannot be recommended, nor can they be regarded as a substitute for antitoxin. Furthermore, he believes that where any benefits have been obtained from the therapeutic use of radium, the effect is not due to the destruction or weakening of the pathogenic bacteria, or disease-bearing micro-organisms, and that a further explanation must be sought. The subject continues to be of interest and an open question, as both positive and negative results have been obtained from the use of radium by physicians; but later reports do not seem to indicate any marked success or advances, while such experiments as those described above seem almost conclusive.

Tuberculosis Open-Air Treatment.—The new open-air treatment for consumptives, by which the patients remain night and day, awake or asleep, in a bath of pure atmosphere, is attracting much attention. Whether the weather is warm or cold, they are exposed as much as possible, being protected only from drafts. If it rains or snows they are not shut in, but are merely sheltered against the wet. Thus they have at all times a maximum supply of oxygen, which is hostile to germ life, while kept safe from further infection and supplied with plenty of nourishing food. The Federal medical authorities have become much interested in the enterprise, and Dr. George M. Sternberg, recently Surgeon-General of the Army, is urging the establishment of open-air hospitals on a considerable scale. Treatment will be restricted to those who are too poor to compass any means for their own relief, and whose removal from their ordinary surroundings will be to the interest of the community at large, in view of the infectiousness of the disease from which they suffer. The method adopted is to build a number of outdoor shelters, each one to accommodate only two patients, with an administrative headquarters for the physicians in charge. Of course, the plan as yet is in only an experimental stage, but if it proves as successful as is indicated by what has already been achieved, such open-air camps will doubtless be established on an extensive scale. Municipalities, for their own protection, can well afford to maintain them, the cost being by no means great. It is estimated, in the *Saturday Evening Post*, that nearly ten per cent. of all diseases that carry off human beings before, in the ordinary course of nature, they would die are caused by tuberculosis, which in this country destroys 160,000 lives annually. Nevertheless, it is entirely preventable by the adoption of a few simple measures of precaution. Consumption would largely disappear within twenty years if people would refrain from spitting in public or other places where their sputum may dry and be carried about in the air, together with any bacilli it happens to contain. By the adoption of sanitary measures the mortality from tuberculosis in France has been reduced within twenty years to forty per cent. In Germany it has been lowered in the same way by an equal percentage. Adequate statistics for this country are not obtainable, but in New York City since 1881 there has been a reduction of forty per cent. in deaths from consumption. The problem of getting rid of this frightful plague can be solved only by educating the people and by the rigid enforcement of regulations against promiscuous expectoration.

Ramsay's Latest Researches.—At the dinner of the chemists on September 8, Sir William Ramsay indulged in a prophetic remark which naturally arrests attention. He suggested the possibility that a discovery was imminent which would throw light on the origin of the "ordinary element." These may be, he intimated, "the products of the breaking down of radio-active elements of high atomic weight"—radium, uranium, thorium and one or two others. The hope to which he thus gave expression was doubtless based on recent but unfinished investigations, briefly described by him in a letter to *Nature* a few weeks ago. There is a general disposition now to explain the strange phenomena which characterize the behavior of radium—among them the evolution of a gas that slowly turns into helium—by assuming that some of the atoms of the first mentioned element disintegrate, and in so doing liberate stored energy. Sir William asked himself if it were not practicable to reverse the process and build up an element by a proper combination of material and energy. The latter would be required in a concentrated form, but a supply could apparently be secured by the breaking down of a radio-active substance. The task which is here outlined possesses great difficulties. Every working chemist knows how much easier it is to ascertain of what elements a compound is composed than to make them unite. Synthesis is very much harder to effect than analysis. Still, it has been possible in the laboratory to imitate nature's example in the production of indigo, camphor and

several other articles of commerce. In like manner the preliminary work already done by Sir William has encouraged him to think that perhaps one kind of atom can be transformed into another by a process of building up.

The Doctor's Income of the Future.—Doctors who believe—and apparently there are many of them—that the members of their profession are different from and superior to the members of all others, in that they are constantly endeavoring to put an end to the thing out of which they live, really ought to view their own mental condition with apprehension. The *Times* suggests that they "take something" for it before this queer delusion lets in a lot more and the unhappy victims pass beyond the possibility of help, even from such of their brethren as remain sane. Latest of many manifestations of the belief that the doctors, from a business point of view, are nobly cutting their own throats, is one that appears in the *Post-Graduate*. "It is not generally realized," says that high authority, "that the medical profession is the only one laboring conscientiously and faithfully to destroy its own source of income. Every improvement in hygiene and in sanitary science, every discovery of a specific source of disease, by improving the general health removes large amounts of money from the medical man's pocket and adds incalculably to the wealth of the community. The time will come when this fact will be generally realized." Possibly. But about the same time, there will be a realization, that the labor, conscientious and faithful as it is, and measurably successful as it has been, besides, is not destroying, or even tending to destroy, the source of the doctor's income. For the task imposed upon them is one that, if not quite endless, theoretically, most certainly will not be completed by this generation of doctors or by any generation of their successors in whom they can pretend to have a personal interest. One can conceive, of course, of a time when medical and surgical science shall have made such progress that everybody will live on indefinitely in a state of perfect health, and there will be nothing more for doctors to do, but an enormous "meanwhile" will precede that glorious age, and while it lasts the doctors are in no danger of starving.

International Congress of Dermatologists.—Upon the invitation of Dr. Hyde, of Chicago, Dr. Stelwagon, of Philadelphia, Dr. Fordyce, of New York, and Dr. Gilchrist, of Baltimore, the American delegates to the International Dermatological Congress, which was in session in Berlin during the present week, it was decided to hold the next Convention in New York. The venerable Professor James C. White, of Boston, was elected president of the forthcoming congress.

OBITUARY.

Dr. A. W. Butler, aged twenty-four years, died suddenly September 6, at the home of his parents in East Nashville, Tenn. Dr. Butler graduated in 1903 from the medical department of the University of Tennessee, taking high honors and winning an interneship at the City Hospital. Excessive application to work, both during student life and while in the hospital, contributed to his untimely death.

Dr. Edward P. Buffet, died at his home, 809 Bergen Avenue, Jersey City, N. J., September 10. He was born at Smithtown, Long Island, on November 7, 1833. He was graduated from Yale in 1854, and from the New York College of Surgeons in 1857. He had practised in Jersey City from that time.

SOCIETY PROCEEDINGS.

BRITISH MEDICAL ASSOCIATION.

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

(Continued from Page 528.)

Section on State Medicine.

Control of Milk Supply.—A lengthy discussion on this subject was held. Dr. George Newman opened the conference. He said: A right understanding of the best methods of how most effectually to control and protect the milk supply depends upon a clear appreciation of the exact reasons and conditions which make control necessary. It is because the public, and perhaps even the profession, do not understand the latter as fully as they might that they do not appreciate the importance of the former or perceive the lines on which it should proceed. For convenience, the reasons necessitating control of milk may be broadly divided into two: First, there is the prevention of milk-borne disease; and secondly, there is the improvement and increase of the milk supply.

Typhoid Milk.—It was Dr. Michael Taylor of Penrith, who in this country first demonstrated the conveyance of typhoid fever by means of milk. This was in 1857. Since that date more than 160 epidemics of this disease have been traced to a polluted milk supply. Schuder states that 17 per cent. of all typhoid epidemics are due to the consumption of infected milk. The steps in the process of infection are briefly as follows: Enteric fever affects the intestine, and hence the excreta, especially in the early stages of the disease, are charged with large numbers of the casual bacilli. It is now known that the sweat, expectoration from the lungs, and the urine of a typhoid patient may also contain the typhoid bacillus. Indeed the urine in 25 per cent. of the cases generally contains large numbers of the bacillus (Horton Smith). There is also evidence to show that the bacilli may remain in the urine for long periods after convalescence, even for months and possibly for years. The bowel discharges and the urine are, therefore, the two chief channels by which the typhoid bacillus is excreted. It, therefore, readily gains access to the soil, to drains, and eventually on occasion to the water supply, and thus into milk and back again to man. The virus does not always pass in the discharges to water and milk, but may reach them by becoming dried dust. A small pollution may in this way set up widespread disease. The most common way for milk to become infected by the typhoid bacillus is through infected water (in 29 per cent. of milk-borne outbreaks according to Schuder). Another source of infection of the milk is when persons suffering from a mild attack of typhoid fever continue to work a dairy or otherwise deal with milk, and this has proved a frequent means of infection. Flies doubtless convey the germ of the disease not infrequently, as was shown in the Spanish-American war of 1898 and the Boer war of 1900-1. Though the typhoid bacillus appears not to have the power of rapid multiplication in milk it has the faculty of existing in milk for a considerable time (twenty days or longer) even when milk has curdled or soured, and may thus infect milk products, such as butter and cheese. But infection by milk products may be eliminated as of too rare occurrence to deserve attention. The bacillus does not coagulate milk like its ally the *Bacillus coli communis*

(which is a frequent inhabitant of milk). It flourishes in milk at room temperature and blood-heat, and does not produce acid or alter the appearance of the milk. The common channels of typhoid infection of milk, as illustrated in epidemics are as follows: (*a*) Personal contact with typhoid patients; (*b*) infection from washing milk vessels with infected water; (*c*) infection by the addition of infected water directly to milk; (*d*) infection from the air by dried typhoid excreta; (*e*) infection from contaminated cloths or clothes; (*f*) infection derived from water in which milk in vessels was being cooled.

Scarlet Fever and Milk.—The second infectious disease shown in this country to be transmissible by milk is scarlet fever. In 1867 Dr. Michael Taylor investigated such a scarlet fever ontbreak at Penrith. Since that date some seventy milk-borne epidemics of scarlet fever have been put on record. It is unnecessary here to do more than mention two broad series of facts which should not be forgotten in investigating milk-borne scarlet fever outbreaks, or in endeavoring to prevent them. First, while in similarly-conveyed outbreaks of typhoid fever it is necessary to consider the various ways in which human infection has been conveyed to milk, in scarlet fever it is necessary to consider in addition the possibility of cow infection. Human infection in scarlet fever outbreaks is almost always conveyed by direct cnotact, and not, as in typhoid, through the medium of water or materials. Since 1881 there has been necessary the added inquiry as to the communicability of zymotic disease from the cow. The case of cow infection of scarlet fever is not yet proved or established. But there is certainly not a little evidence to show that previously to some scarlet fever outbreaks, and outbreaks of aberrant forms of disease to be mentioned immediately, certain pathological conditions of the cow's udder have been found to be present: and it may be that further research will prove that there is causal relation between such conditions of the cow and disease in persons consuming the milk derived from such cows. Certainly there is sufficient evidence to make necessary careful axamination of the cow in all milk-borne outbreaks of disease. The second point to which attention must be called is the clinical modification of scarlet fever which has been milk-borne. Such disease is generally mild, and accompanied by a large number of ordinary sore throats. Even in the scarlatinal cases the disease has a tendency to remain localized to the throat. The rash is evanescent, and the desquamation scanty. There is commonly a marked absence of post-scarlatinal nephritis, and a marked presence of alimentary disturbances, sometimes amounting to intoxication.

Diphtheria and Milk.—In 1878 evidence was first forthcoming in support of the view that diphtheria might on occasion be spread by milk. In that year Mr. W. H. Power made an inquiry into the outbreak of diphtheria in North London, and although it was clearly shown that milk was the channel of infection it was not discovered how the milk became infected. By a process of exclusion Mr. Power suggested that there may have been risk of specific fouling of milk by particular cows suffering, whether recognized or not, from specific disease. Subsequently to the discovery of the Klebs-Löffler bacillus, Klein investigated the question of cow diphtheria, and Dean and Todd have recently thrown further light on the subject. There can be little doubt that milk is a favorable medium for the *Bacillus diphtheriæ*. The organism both lives and multiplies in ordinary sterilized milk, but it thrives better in milk at comparatively lower temperatures than 37° C. In ordinary milk, unsterilized and unprepared, the commoner organisms multiply much more rapidly, and so the diphtheria bacillus is in all probability soon crowded out. The cases, however, in which the *Bacillus diphtheriæ* has been actually isolated from milk are extremely few. He further spoke of sore throat and epidemic diarrhea both as being conveyed by milk and presented a lengthy argument concerning the conveyance of tuberculosis by this medium. Improvement of the milk supply, the conditions of the milk trade, and the quality of milk were other topics taken up by Dr. Newman. He very generously accorded to this country a just commendation for the excellent work done on the milk supplies of our large cities and seemed to think that England was behind in her study of the problems of pure milk supplies.

Hygiene in Elementary Schools.—Dr. W. N. Barlow spoke of the needs of teaching simple hygienic subjects in the elementary schools. Nearly every medical officer of health, he said, in his annual report, deplores year by year the immense wastage of infant life, and comments upon the causes contributing thereto. It has been pointed out that, while some amount is due to neglect and indifference, very much more is due to ignorance. Hundreds of lives are lost yearly through ignorance of how to feed children. Hundreds of lives are lost yearly through ignorance of the simple laws of health. A man with a prize dog will take immense pains to learn how to feed the animal and keep it in health, but will take no pains to see that his baby is properly fed and clothed, or how to keep himself healthy. Many hundreds of infants' lives are lost by reason of clinging to old superstitions regarding measles and whooping-cough. They are still considered mild diseases and of no account, in spite of oft-repeated warning that they kill more than all the other what are called "dangerous infective diseases" put together. It is a common superstition in Liverpool, that if a child with whooping-cough be taken across the river when the tide is on the ebb, that the disease will ebb with it, the result often being that an attack of bronchitis follows and the child's life ebbs altogether. Efforts have been made to lift this pall of ignorance by scattering leaflets broadcast dealing with infant feeding, etc., and by popular lectures; but the fact remains that, among the poorer classes, most mothers cannot be taught; some will not be taught; and it has now come to be accepted that the best way to fight the battle is to do what is possible by means of leaflets and lectures with the present generation, and to improve the next generation by teaching a few of the elementary facts regarding personal hygiene, domestic hygiene, and the feeding of infants to the children (especially the girl children) now at school. Now many education authorities, while looking more or less favorably upon the suggestion that hygiene should be taught in public elementary schools, say, "But how can we include this subject? our curriculum is already full to overflowing, and there are already many subjects much more valuable which ought to be taught and for which there is no room." Others say, "We already teach it in the subject called domestic economy." With regard to objection No. 1, I cannot do better than take a few extracts from Herbert Spencer's Essay on Education, a most valuable book, which I would recommend to all who have not yet read it.

Spencer deplores that the useful in education is sacrificed to the ornate, especially with respect to women. He says: "In the treatment of both mind and body, the decorative element has continued to predominate in a greater degree among women than men. In their education the immense preponderance of 'Accomplishments' proves how use is subordinated to display. When we have named reading; writing; spelling; grammar; arithmetic; and sewing, we have named all the things a girl is taught with a view to their actual uses in life." Again he says: "If there requires further evidence of the rude, undeveloped character of our education, we have it in the fact that the comparative worths of different kinds of knowledge have been as yet scarcely even discussed—much less discussed in a methodic way with definite results. Not only is it that no standard of relative values has yet been agreed upon, but the existence of any such standard has not been conceived in a clear manner." Again, "For complete living it is necessary not only that sudden annihilation of life shall be warded off, but also that there shall he escaped the incapacities and the slow annihilations which unwise habits entail. As without health and energy the parental, the social, and all activities become more or less impossible, it is clear that this secondary kind of direct self-preservation is only less important than the primary kind: and that the knowledge tending to secure it should rank very high. Consider how ill-health hinders the discharge of duties, makes business often impossible and always more difficult, and produces an irritability fatal to the right management of children." "Vigorous health and its accompanying high spirits are larger elements of happiness than any other things whatever, the teaching how to maintain them is a teaching that yields in moment to no other whatever!" One last quotation: "Is it not an astounding fact, that though on the treatment of offspring depends their lives or deaths, and their moral welfare or ruin, yet not one word of instruction on the treatment of offspring is ever given to those who will by and by be parents. Is it not monstrous that the fate of a new generation should be left to the unreasoning custom, impulse, fancy, joined with the suggestions of ignorant nurses, and the prejudiced counsel of grandmothers? To tens of thousands who are killed, add hundreds of thousands who survive with feeble constitutions, and millions who grow up not so strong as they should be, and you will have some idea of the curse inflicted on the offspring by parents ignorant of the laws of life." In the face of words like these from such a man as Herbert Spencer, can it now be advanced that there is no room in the preliminary schools for instruction on hygiene.

School Diphtheria in London.—Dr. C. J. Thomas gave a paper on this subject. His conclusions were as follows: 1. Diphtheria is spread by schools to a certain and considerable degree. 2. It is spread by direct personal transmission. 3. It can be checked by swabbing and excluding children carrying diphtheria organisms. 4. These children are chiefly mild, actually suffering cases. 5. Their age is usually between five and eight years. 6. Pseudo-diphtheria organisms may safely be ignored. 7. School closure for diphtheria should be looked upon as a confession of impotence and defeat. 8. There is urgent need of greater recognition even on the part of medical practitioners of the rôle of slight cases and carriers. In many instances children sent home by the teachers have returned after seeing a doctor who has said they were not suffering from diphtheria, although their throats swarmed with diphtheria organisms. 9. All contacts with diphtheria cases should be rigorously swabbed before being allowed to mix with the general population. Disinfection of homes without this precaution is futile. 10. Much greater facilities for bacteriological examination need to be provided. 11. Could not the annual report of medical officers of health dealing with such facts as these become a means of education on these points? At least could they not be distributed to each member of the profession in the sanitary district?

Poverty and Public Health.—Dr. T. P. Whittaker spoke of the influences of alcoholic beverages and this general subject. His paper contained many interesting statistical summaries, but no large or new generalizations.

Pauperization.—Mrs. B. Bosanquet gave an interesting paper on this subject. Among other things she said that physical conditions which characterize the kind of life deplored are, generally speaking, dirt, overcrowding, insanitary houses, foul air, and insufficient or inappropriate food and clothing; to these must be added the presence or results of disease in the physical organism itself. All will agree that there is no single remedy for these various evils; each calls for its particular remedy, in devising which the whole skill of the expert is required. But it is not these particular remedies which are considered here; it is the general method of their application. The medical and sanitary experts will tell the particular remedies for drink, disease, and physical backwardness; the point to consider is how these remedies may be most effectually and universally applied. In short, the importance of a definite policy of reform should be urged. For in opening up an attack upon these evils there are two quite distinct policies between which have to be chosen. There is first the policy which assumes that one and all of these very dissimilar results are due to the same cause—namely, poverty; and which, therefore, aims at merely supplying from outside what is more obviously lacking. It assumes that the recipients are desirous and capable of living the healthier life, and are debarred from doing so by their poverty alone. This is the policy which thinks the way to reform lies through free meals and clothing, municipal housing, and other subsidies from charity or Poor-law institutions. The other policy is adopted by those who have found that these evils frequently exist where there is no poverty to account for them, and are driven, therefore, to probe more deeply for the real causes. These they find in the absence of those dispositions, faculties, and interests, which we are apt to sum up in the word "character;" and they find, moreover, that poverty itself is frequently but one among many outcomes of this lack of character. Hence they maintain that the true method of attack is to strike straight at the root of the evil, and by education and the healthy stimulation of interests, to arouse the energies and knowledge which will lead the backward into the ranks of the forward. A few typical cases may illustrate how important this question is of choosing a right way of applying remedies. Sanitary experts tell that one great cause of ill-health and vice is overcrowding and insanitation. Desiring to apply this knowledge rapidly and effectively, some authority clears an insanitary area and puts up dwellings of the most approved type. One of two things happens; either they permit the old inhabitants to take possession

of the new dwellings, in which case they are soon reduced to dirt and squalor; or—and this is what generally happens in London—the authority declines any but respectable tenants, and the old inhabitants go off to make a new slum elsewhere.

Or take an instance quoted by the chairman of the Birmingham Housing Committee in last week's *Spectator*. An owner was called upon by the Housing Committee to spend a large sum of money on two courts. He did everything that was required, yet now, six or twelve months afterwards, the tenants have made the houses almost as dirty as ever, and this is in no way due to the way in which the repairs were done." Take another instance. The children in an elementary school being badly nourished, the remedy naturally suggested is good food, and the reform-institutes meals at school. The inevitable result is that many mothers, relying upon these meals at school, reduce the number of meals at home, and the evil, instead of being reduced, is spread over an increasingly wider area. Or another: the doctors tell us that the great cause of infant mortality is insufficient or impure milk. Sterilized milk in bottles is supplied, until two difficulties are confronted—on the one hand that mothers may be tempted by it to cease to nurse their own children; on the other hand that, owing to the inevitable association between bottles and medicine, will only give it to their children so long as they are definitely ill. It really seems sometimes as if all efforts were useless. And yet the fault lies in no sense in the remedies themselves; it is the application of them which is wrong.

It is absolutely necessary that before any progress at all can be made the people themselves should be enlisted on our side, and to do this their minds must be influenced, we must get them to take an active intelligent interest. It is a far more difficult task than one of handling bricks and mortar, and food and clothing; but it is essential. If we can make them care for clean houses we can give them clean houses to live in; if we can make them take an intelligent interest in their children they will not fail to feed them: and if we can teach them something of the relation of food to the needs of growing children, they will feed them properly. It may be asked what proof I can offer that it is mainly ignorance and lack of interest which are at fault, and not poverty alone. I appeal for support mainly to the experience of intelligent workers amongst the poor, who have learned slowly but surely how uncertain the connection is between good earning and a good home. For those who find a greater security in figures I may refer to the rough test afforded by Mr. Rowntree's investigations in York. You will remember that of his 27 per cent. living in conditions of apparent poverty over 17 per cent. were in receipt of incomes which should have raised them out of it, while less than 10 per cent. had incomes insufficient for a healthy life. Even on this rough test, therefore, the great majority might have led healthy lives if they had known how and cared to. But more than this, we who have seen much of the lives of the poor know how often in cases of exceedingly small income, of real poverty, the worst forms of evil are absent. That is, the homes are clean, the children are healthy and well cared for, and the family life sober and industrious. Now, you will grant me that in those numerous cases where people live unhealthy lives through sheer ignorance or self-indulgence the only remedy is education and stimulus. To give money in such cases is simply to subsidize the public house and gambling; to give food is to set free more money for the same purpose; to feed the children at school is to check the supply of meals at home; while no one has been ingenious enough to even suggest a gift which will make lazy people clean.

It is not so immediately obvious that this policy of subsidising is useless in cases of real poverty, but it is just as certain, except under very definite conditions and in very definite cases of misfortune.

Consider with me for a moment what are the conditions which make men efficient workers, capable and strenuous. Some of us, no doubt, work from ambition and the desire to rise to the head of our profession; others from sheer love of our work. But for the vast majority of men the chief motive is the sense of responsibility for their own lives and those of their family. To all of us in some degree, to most of us in a very great degree, work is repugnant, and strenuousness is difficult; it is much easier to let ourselves go, to work little rather than much, to be slack rather than efficient. Against this natural indolence there is no spur so effective as a man's interest in the home and wife and children for whom he has made himself responsible. Here and there are men with wider interests, who do not need this spur; but this is, or may be the common birthright of all mankind, and deprived of it the majority lack either courage or strength to live strenuously. To realize what a man becomes who has cut himself adrift from these natural interests without substituting others as potent, we need only turn to the forlorn tramps and vagrants who drag out their listless lives in wandering between casual ward and common lodging-house.

It is for this reason that any movement which tends to lessen a man's responsibility for his own family life does far more to increase than to lessen poverty. It may be urged that you are only helping a man to fulfil his responsibilities, that you have no intention of undertaking them altogether; and between individuals, between friends and neighbors, this is a possible though difficult position. It is next to impossible when the movement becomes a general one, and some charitable or State institution intervenes to share the work of providing for the daily needs of the family. The people who are ready to impose upon the benevolence of a neighbor are comparatively few, but still fewer are the people who are at all reluctant to get all they possibly can from an impersonal source of charity or relief.

(To be Continued.)

WILL'S HOSPITAL OPHTHALMIC SOCIETY.

Stated Meeting, held April 11, 1904.

The President, Charles A. Oliver, M.D., in the Chair.

Diseases of Conjunctiva.—Dr. Harold S. Goldberg opened the discussion on this subject, demonstrating the conditions seen in an exhibit of macroscopical and microscopical specimens, illustrating the gross and minute changes found in various conjunctival diseases. He showed the microscopical appearances of the invaded structures in diphtheric conjunctivitis (the germ of diphtheria being, he said, quite a frequent successful invader in the conjunctival soil), and differentiated them from those which are seen after gonorrheal conjunctivitis. He believed that the streptococcus is, as a rule, responsible for the gross changes seen in the diphtheritic types of conjunctival disease. He showed the relative effects of benign and malignant tumors

upon the membrane, contrasting these in their differences. He exhibited the behavior of various granulomata, and gave a résumé of the condition of the conjunctival structure in a case of perforating panophthalmitis as one of the results of endogenous infection from typhoid bacilli. He said that there was little known of the difference in the histology between diphtheritic and pseudomembranous conjunctivitis; the Klebs-Loffler and xerosis bacilli being so much alike morphologically as to make their differentiation difficult. He dealt at some length as to the relative actions of the various antitoxins. He spoke of the epidemics of conjunctival disease to which the hospital had been subjected, and cited the different modes of treatment by which the condition had been successfully combatted. He had found that the recent epidemics of conjunctival diseases in this city (Philadelphia), could be traced to the diplococcus lanceolatus. He compared these findings with those which he had read of as having been seen in other cities and countries.

From a large experience Dr. Frank Fisher had found that by a constant repetition of similar cases he had been enabled to differentiate clinical signs which he had learned to treat and manage by definite and well gauged rules: One of these had been the free use of saturated solutions of chlorate of potassium in diphtheritic and so-called pseudomembranous conjunctivitis. He had found that if this drug is used in such cases there is less danger of corneal involvement, and that there are fewer cicatrices left in the conjunctival membrane. In association with the drug, in combination with warm applications and the use of mild detergents locally, he made free internal use of the tincture of the chloride of iron. He stated that he had found that the application of nascent silver salts was not of any benefit in cases of diphtheric conjunctivitis. He had noticed that the cicatrices following diphtheria of the conjunctiva resembled a condition of cirrhosis. He classified pseudomembranous conjunctivitis and diphtheric conjunctivitis together. He always treated diphtheria of the conjunctiva systematically as well as locally. He believed trachoma to be nothing more than the excessive stages of ordinary follicular conjunctivitis; trachoma being a second or tertiary stage of true granular conjunctivitis—a condition in itself in which there is more or less atrophy of the follicles. In these cases, there are, he believed, all of the sequelæ of repeated inflammation, such as contraction and distortion of the lid, nebular pannus, and dry, hardened or greasy remains of the conjunctival membrane. In true trachoma, he took care to express all of the follicles in the conjunctival sulcus, preferably by the finger nails, following this procedure by the use of tannin, boroglyceride, and silver. He believed that dilation of the lacrimal canals and ducts was useful in offering better drainage for the vitiated secretions. Empirically, he had become favorably impressed with the results that he had obtained by the judicious use of alum in the late stages of gonorrhœal conjunctivitis. He also usefully employed solutions of acetate of zinc, chloride of zinc, biborate of soda, and boracic acid. Adrenalin he had used, but did not find its employment of any advantage.

Dr. S. Lewis Ziegler's experience in acute conjunctivitis had been that the more simple and the less irritating the application had been, the more quickly good results were obtained. As a rule, he employed four of five grain strength solutions of silver nitrate for the first application only, followed by such drugs as glycerole of tannin, boroglyceride and argyrol. These should be used ad seriatim, as all local applications sooner or later lose their effects and must be changed. He had found the best results from the employment of biborate of soda and boric acid in simple solutions. If the muco-pus persists alum, one to four grains to the ounce, will be most efficient. (The acetate of zinc is of value when the convalescence is slow). In the chronic forms of the disease, such as trachoma, he had had useful recourse to rapid dilation of the lacrymal passages, together with intranasal applications. In the purulent forms of conjunctivitis he made a daily application of a ten grain silver nitrate solution, neutralized by salt, and washed off with boric solution. Argyrol he also employs or else gives to the patient to be used at home. Mercuric bichloride (two grains to the pint) he used for irrigation in the early stages (and later, one grain to the pint), with the large bulb dropper, every fifteen minutes to a half hour day and night until acute stage is past. He applied ice pads constantly.

Dr. P. N. K. Schwenk said that his experience had been that all cases must be treated empirically. In simple ones he used weak solutions of nitrate of silver, boracic acid, and biborate of soda. Believing in the identity of granular conjunctivitis and trachoma (they differing alone in points of rapidity of development and severity of symptoms), he resorted to similar treatment modified to suit the existent conditions. Empirically, he had found the use of boroglyceride of great value in the treatment of diphtheric conjunctivitis.

Dr. Charles A. Oliver stated that the majority of cases of conjunctival disease were microbic in type, the clinical signs being in definite relationship with the anomalies of reaction to the preponderant acting germ. He considered that every ordinary conjunctiva, no matter how well cared for hygienically, was a harboring place for germ life—of both useful and harmful types: in fact, he considered that the membrane was, by this reason, kept in better condition, and made better able to withstand the attacks of injurious forms and coarse degrees of injurious bacterial colonization. He explained the difference between the scavenger type of germs and the serum consuming varieties. He showed how the anatomical relationships and peculiarities of structural formation rendered it more difficult for certain forms of bacterial growth (for example, the difference between related bacilli and cocci) to gain access to favorable resting grounds. He subdivided conjunctival disease in strict accordance with the clinical manifestations of the prevalent germs, and was thus able, by repeated bacteriological study during the course of the disease, to so regulate his therapy as to give the quickest and the best possible results in any given case. He had ceased to be disturbed as to prognosis in cases in which formerly he had had the gravest doubts as to useful recovery. Cleanliness of the parts, hibernation of germ life, destruction of the floral cells, with the least disturbance to the invaded faunal cell as possible, with protection to the most important contagious tissues, constituted his bases for therapy. He emphasized the relationship of the state of the patient's general health to the conjunctival condition at hand, this being particularly true in gross forms of disease, for example in Klebs-Löffler bacillus conjunctivitis in which he had obtained the most brilliant results by the early use of subconjunctival injections of antidiphtheritic serum; and in the scavenger type as a part of multiple infections of the mucous tract, in which general mucous therapy was a necessity. In his bacteriological studies he had come to the conclusion that all conjunctival diseases are primarily the results of mixed infection; one or more types of germ life gaining the ascendency, and giving the clinical peculiarities to the individual case. In the destruction of the parts, he

had found that it was not the prevalent microbe which destroyed the organ, but that the particular microbic invasion so reduced the protective agents in their activities as to allow them to become the prey of the pyogenic forms of bacteria. He stated that it should not be forgotten how certain types of germ being in an involutional state from their ancestral forms having become exhausted in different mucous soils (those in the urethral canal, for example, giving rise to a chronic and hardly noticeable gleet) are placed in a new pabulum-field (in a fresh soil such as the conjunctiva) would soon have their successors become optimal in condition and virulent in action (coarse gonococcal conjunctivitis). Conversely, from experiments and studies that he had made, he had found that gross forms of gonococci flourishing in a good soil would when placed in previously used and hence practically barren soils, soon become involutional in condition, oftimes monstrous in form and negative in action. He described the term "granular conjunctivitis," believing the conjunctival inflammation as merely secondary to reaction in the underlying microbic nestings of vegetable life with destruction of the adjacent faunal cells; resulting in cicatricial contraction and loss of the involved parts. He showed why the conjunctiva of the infant is less liable to injury from gonococci than that of the adult—giving a series of illustrative cases for explanation. He cited several examples occuring in the eye wards of the Philadelphia and Presbyterian Hospitals which well illustrated these differences.

Dr. L. E. Marter spoke of the injurious effects of chlorate of potash, if used in too great amounts. He gave a most interesting account of his experiences with the employment of varying strengths of solutions of permanganate of potassium in the different types of conjunctivitis, and inquired if the experience of the other members had been similar to his.

Dr. Samuel H. Brown stated that he wished to place upon record the almost constant plan of successful treatment of chronic cases of trachoma in the clinic of Dr. Conrad Berens, his chief—*i.e.*, by the use of fifty per cent strengths of boroglyceride. Incidentally, he had seen most favorable results in such cases from the local employment of graduated dosages of adrenalin—he having found this drug a most excellent adjuvant.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Regular Monthly Meeting held Monday, April 25, 1904.

The President, Wendell C. Phillips, M.D., in the Chair.

The scientific business of the evening consisted of a series of papers on the bacteriology and source of various food products and of the water supply of New York City.

Typhoid Fever and Oysters.—The first paper of the evening was by Dr. Cyrus W. Field, assistant bacteriologist of the Department of Health of New York City, who described some bacteriological observations relating to the transmission of typhoid fever by means of infected oysters. Oysters were infected with typhoid fever bacilli and then observations at regular intervals made with regard to the number of bacteria to be found in them. It was found that in healthy oysters the number of bacteria becomes gradually reduced so that on the second day there are only about half as many as on the first day, while on the ninth day practically all the bacteria are dead and failed to give colonies when plated for counting purposes.

Typhoid Bacilli and Salt Water.—During the experiments the oysters were kept in ordinary sea water and it was resolved to study the effect of this upon typhoid bacteria. It was found that if sea water became infected with typhoid bacilli, the number of the microorganisms became gradually reduced almost in the same proportions as had been noted in the observations made upon oysters. Where at first after contamination 200,000 bacteria were found to the cubic centimeter, after twenty-four hours only about 100,000 bacteria were to be found in the same space, and on the ninth or tenth day the bacilli had entirely disappeared. When the oysters were kept in contact with the same water conditions were not so favorable for the disappearance of bacilli as would usually happen with the ebb and flow of tidal salt water. Accordingly observations were made, changing the water every day and then it was found that after four days no bacilli could be found. The salt water itself seemed to act as a disinfectant under favorable conditions. These observations are in accord with those of Foote, made at New Haven in 1895, where he found that typhoid bacilli were destroyed at the end of ten days. If the water, however, in which the oysters were kept was cold, then the bacilli remained alive for from four to six weeks. In a word, cold inhibits the antiseptic action of salt water.

Dead and Dying Oysters.—Dr. Field made a series of observations also with regard to dead and dying shellfish, that is, clams as well as oysters. In these cases it was found that the lack of vitality in the animals served to make them an excellent culture medium for bacilli. Where, for instance, the original contamination showed from ten to twenty thousand bacteria to the cubic centimeter, this number soon ran up even to 100,000 whenever the oysters or other shellfish were dead, or even when they were not in normal good health. As the opposite happens, as a constant reduction of the number of bacteria is found when the shellfish are healthy, the importance of this factor in the transmission of typhoid fever must also be taken into account. During the course of shipment it is not unusual for a certain number of oysters to suffer so severely as to possess no vital reaction. If by any chance these were infected before the journey began, if they should be placed under water in the neighborhood of other oysters at the end of the journey, they would almost certain serve as a source of infection for oysters near them.

The Oyster in Typhoid Fever.—Dr. Walter Bensel, acting sanitary superintendent of the Department of Health of New York City, discussed the oyster as a possible agent in the transmission of typhoid fever in and around New York City. He said that typhoid fever occurred in New York City only in sporadic cases and evidently, therefore, not as the result of transmission through the water supply. Careful investigation showed that a considerable proportion of people who have been constantly in New York City for a month before coming down with typhoid fever were habitual drinkers of raw milk, or frequent eaters of raw oysters. There remained, however, a certain number of cases in which neither of these causes could be considered as active, but in which raw vegetables, or other sources of infection, must be looked for. Besides, as the inquiries had to be made usually several weeks after the actual infection took place, patients frequently had forgotten with regard to important details, or were too ill to give the information and, as could well be understood, friends could not supply it satisfactorily.

Oyster Beds and Contagious Material.—An investigation of the source of oysters eaten in New York City had been undertaken by the Board of Health and

this served to show very well that there was every reason to suspect oysters as not only a possible, but a frequent source of infection. Dr. Bensel then showed by means of photographs the condition of affairs that exist on the Long Island coast of Long Island Sound, on the Connecticut coast of the Sound, on Staten Island and along the shores of the various "kills" in New Jersey from which oysters are collected and in the creeks of which oysters are stored for a time and go through the process known as fattening for the market. This process is always carried on in brackish water, usually at some distance from the actual oyster beds and consists in the irritating effect which more or less fresh water has upon oysters, causing them to absorb water and look fat and plump. Many of these creeks cannot fail to be contaminated by sewage from the banks, and as a matter of fact no special precautions are taken to avoid this.

Sewage Material and Oyster Fattening.—In many places on Long Island oysters are fattened on the lower floor of oyster houses along the banks of the stream, the level of this floor being slightly below that of the water, especially at high tide. It is not an unusual thing to find privies, barnyards, poultry yards and other such extremely undesirable sources of the worst kind of sewage material within a few yards, sometimes within a few feet, of the banks of the stream on which the oyster houses are built. There is not even the more or less questionable advantage of water flowing outward constantly, which might serve to carry off sewage material. There is a certain amount of influence of the tides in these creeks and this often delays the onward flow of water for hours at a time, thus allowing sewage material to become generally diffused in the water which is to serve for the purpose of fattening the oysters.

Oyster Barges and Sewage.—Along the Connecticut coast and in various parts of New Jersey oyster barges which permit a rather free inflow and outflow of water are used for the storage and fattening of oysters after they have been taken by means of the dredge. The Connecticut coast is in certain places where oysters are most plentiful and where the trade is briskest, rather thickly inhabited. Towns containing from twenty to fifty thousand inhabitants empty their sewage into streams which are used for fattening the oysters. In New Jersey not infrequently along the creeks in which oyster barges are anchored privies and outhouses are situated, the droppings from which are expected to be carried off immediately into the water. In one striking picture the outhouse for a factory was situated directly over the water within twenty feet of an oyster barge.

Railroad and House Drainage.—Some of the photographs exhibited showed the pouring of house drainage of various kinds from wooden troughs into the creeks in which the oyster floats were and it was very evident that the washings from the streets of many of the little towns are carried directly into the stream every time that there is more than an ordinary rainstorm. In some of the towns in New Jersey the sewers empty directly into some of the rivers in which oysters are stored often for weeks before being sent to market. Through these sewers factory drainage of various kinds finds its way to pollute and discolor the flowing water. At one point a number of oyster floats were anchored not very far from a railroad bridge across which are carried many trains every day. It is easy to understand that under such circumstances it will not infrequently happen that fecal and other excrementitious material will find its way directly into the water from the cars.

New York City Milk Supply.—Dr. William Hallock Park, the assistant director of the Research Laboratory of the Department of Health of New York City, described the sources of New York City's milk supply and discussed the method by which the Board of Health endeavored to improve the quality of this important food material. A city inspector by the privilege of the State Commission of Health is allowed to visit various parts of the State, wherever there is a report of possible contamination or of conditions likely to make the milk supply unhealthy. The milk supply of the City of New York, however, comes from distances on a radius of three hundred miles from the States of Pennsylvania, New Jersey, Massachusetts, besides New York itself. Milk comes from as far North as the St. Lawrence. Owing to the absence of funds for this purpose, inspection falls short of what it should be.

Inspection Work.—Wherever there is absolute neglect, farmers are warned and notices are sent to them giving general directions how dairies must be cared for, cattle housed, milking carried on and milk preserved. Special emphasis is laid on the necessity for immediate cooling of the milk, because it is well known that at low temperatures bacteria will not grow in milk, while at ordinary temperatures they grow luxuriantly. It is not so much the bacteria which get into the milk, especially if there is any sense of cleanliness at all, but the rapid multiplication of them that causes the danger with regard to milk. One method of enforcing this precaution is to insist with the railroad company that milk to be delivered in New York must be brought into the city at a temperature of fifty degrees. Not infrequently it happens that the railroad journey is not long enough to permit the milk to reach so low a temperature unless it is already cooled when it reaches the railroad companies. Accordingly the railroad companies insist on the farmer having his milk cool when delivered on board of the cars.

Insidious Dangers of Milk Contamination.—Dr. Park gave some examples of the insidiousness of the danger of infection from milk under circumstances where it may be least expected and may seem unaccountable. A series of cases of scarlet fever occurred in several schools, all of them supplied with milk from one source. The milk was supposed to come from an excellent farm on which all the sanitary precautions necessary for the delivery of good milk were maintained. It was found on investigation, however, that the demand for the milk of this farm had been so heavy that they had been unable to supply it entirely and had made up the deficiency in their own product by securing milk from a farm some distance away. The conditions on this second farm were as unsanitary as can possibly be imagined. In the barn in which the cows were kept there were no windows, the ventilation was very poor and dirt was everywhere. As a matter of fact, a septic condition was found to exist in one of the cows and some of this material had evidently found its way into the milk and was the source of typhoid fever.

Typhoid Fever and Milk.—Dr. Park also gave some examples of how easy it is for typhoid fever to contaminate the milk supply on farms where the well and the privy are not far from one another and where a certain amount of leakage is almost sure to take place. In this case the vessels in which the milk was stored are washed with the water and thus readily become contaminated and the milk stored in them becomes a veritable culture medium at times of an almost pure culture of typhoid bacilli.

Work of Milk Commission.—Dr. Park considers that these facts show the necessity for the existence of the milk commission which was organized and is maintained

because neither the State nor the city had sufficient money at command to secure proper inspection of the milk supply. Unfortunately there is not the response to the commission's effort on the part of doctors that should in all reason be expected from them. There is a complaint that certified milk is too dear and so it is not used except by the wealthier classes. On the other hand, inspected milk, though only slightly costlier than the ordinary unexamined milk, is utterly neglected. Even hospitals prefer to get ordinary milk in bulk, though they would have to pay only about one-third a cent a quart more to secure inspected milk. By inspected milk is meant that it is the product of farms and dairies in which the farmer takes all the ordinary sanitary precautions in order to prevent, as far as possible, the occurrence of all bacterial contamination and in which particularly, immediately after milking, the milk is made cold so as to prevent it from becoming a culture medium for the growth of micro-organisms. Undoubtedly the recommendation of this milk would encourage other farmers to take the precautions necessay and thus bring about a gradual improvement of the city's milk supply by the education of the farmer.

Water Supply and Typhoid Fever.—Mr. Henry E. Bramley, Chief Sanitary Inspector of the Department of Health in New York City, discussed the city water supply with particular reference to possible contamination with typhoid fever bacilli. The first part of his paper consisted of a historical review of New York's efforts to obtain pure water. The first reservoir, planned in 1774, was to cost £2,500 and was situated on what is now East Broadway, about Pearl Street. Later the Manhattan Water Supply Company was organized, which obtained its water from wells for distribution to the citizens. Of late years, of course, the main source of New York's water supply has been the Croton region, and there is no doubt that greater care and more frequent inspection is needed than has been the rule so far. The Board of Health are accomplishing much for the protection of the city, as may be understood from the fact that 18,000 cesspools were cleaned during the last year in order to prevent possible infection.

Legal Aspects of Watershed Control.—Harford P. Walker, Esq., assistant Corporation Counsel, of New York City, one of whose main duties is in connection with the water department of the city, discussed the legal aspects of New York City's control of its own watershed. He said the ideal state of affairs for the city would be for it to own several hundred feet of ground alongside the creeks and streams and lakes from which it drew its water supply. Already $7,000,000 have been spent in thus protecting the city water from possible contamination. It will cost $5,000,000 more to secure the rest. In the meantime care must be exercised and the assistance of the Board of Health asked in co-operation with the water department in preventing nuisances from proving sources of infection. Unfortunately the present state of the law with regard to contamination of public water supplies in New York State is not satisfactory for protective purposes.

Webster Act.—As the result of the cholera scare, something over ten years ago, the Webster act was passed by the legislature of New York and signed by the Governor, giving New York City the right to remove any nuisance that might exist as soon as the Board of Health adjudged it dangerous, the question of compensation to the owner being left for subsequent adjudication by the civil court. Unfortunately this act was to have its provisions enforced only for three years. At the present time New York City is practically dependent on the State Commission of Health for the abatement of nuisances and this has introduced so much red tape into the procedures necessary to secure and enforce the removal of nuisances as to make our present laws for the protection of water supplies of the community generally more or less abortive.

Impossibility of Securing Conviction.—Mr. Walker presented the nine reasons why it is practically impossible to secure a conviction under the present law. First, the violation must be reported to the local Board of Health and a second warning must be sent to the violator; second, after a certain time inspection must be made to see if there is improvement in the matter complained of; third, in the absence of improvement the matter must be reported to the State Health Commission, which, as the fourth step, sends an inspector, who must report the matter back to them. Fifth, the State Commission warns the local health authorities; sixth, the local boards of health must convene and take cognizance of the matter and only then (seventh) is it possible to go on with their approval and secure the conviction of the offender. The corporation counsels office drew up two bills for the purpose of obviating these difficulties, but owing to an unfounded suspicion that somehow they had something to do with grabs with regard to the water supply of New York, these bills were not passed. At the present time it would seem eminently advisable to secure the repassage of the Webster act, by which the city could remove nuisances whenever they seem to become a menace to health and then pay such damages as should be adjudicated in the case.

State Commission of Health.—Dr. Daniel Lewis, the State Commissioner of Health, in discussing the subject of State control of water supply, said that the ownership of the Croton watershed, as far as is necessary to protect New York City's water supply, is being gradually acquired. He denied that the present laws cannot be enforced, since, in a number of cases, nuisances have been abated and other cities throughout the State are well satisfied with what they are able to accomplish, when they are really determined in the matter. Last year a number of infractions of the present law were reported to the Commissioners of Health. Within fourteen days, investigations were begun. Within twenty-one days reports of inspection were filed and if these cases had been prosecuted, as they should have been, undoubtedly greater respect for law would have been inspired, and it would have been easy by simple warnings to secure the abatement of other nuisances. As it is, for some reason or other the cases were not prosecuted and this laxity reflects back and makes conditions worse in the watershed.

The Other Side.—Dr. Lewis considers that the other side of the question should be considered, and that the mere fact that people are living along the watershed should not be supposed to compel them to take expensive measures for the protection of others without some due compensation. No allowance is made for improvements effected and it must not be forgotten that the present discussion is evidently not meant to apply so much to existing conditions but to future possibilities. If by proper treatment the people themselves can be got to cooperate with the health authorities then much can be accomplished without appeal to legal procedure.

Dr. Bensel, in closing the discussion, said in answer to a question from the president as to whether any of the streams in which oysters were placed for fattening purposes were ever used for drinking by the people who lived along the banks, that practically all of these streams were in direct connection with the waters in which the oysters grow, as indeed they must necessarily be for the dredgers to bring oysters up in them and that consequently because of mixture with salt water during

the inflow of the tide most of them were brackish and therefore undrinkable. This, however, actually added to the danger as far as oysters were concerned, since, if any of the streams were used for drinking purposes the inhabitants along the banks would be much more careful with regard to the keeping the water free from sewage contamination. At the present time no attention seems to be paid to this matter and it does not seem to be considered as of any importance.

Dr. William H. Park said that in the matter of milk inspection and the improvement of the milk supply of New York City, the New York State Commissioners of Health had been very helpful and far from putting any obstacles in the path of the special milk commission or of the city Board of Health, they were ever ready to accord inspection privileges.

Dr. Darlington said that the city was indeed to be congratulated on the active workers of the Board of Health whose work he was just beginning to appreciate properly, while the State Commission of Health deserved all praise for hearty co-operation.

Prosecution of Quacks.—Mr. Andrews, of the Medical Society of the County of New York, then made a report with regard to some recent prosecutions of persons who are practising without a license or engaged in the sale of nostrums that brought them without the pale of the law. The Society had endeavored to expose one Philip Koch who posed as the brother of Robert Koch, and pretended that he was a collaborator with the distinguished German bacteriologist in the invention of a so-called lung cure. This Philip Koch had gone to England during the session of a tuberculosis congress, some years ago, and having waited until Robert Koch registered, signed his name immediately below and then secured a photograph of the two names to be used for advertising purposes. His exposure had broken up his business, though the fact that he employed two registered physicians prevented his active prosecution. As the result of the Society's work, however, he is now behind prison bars for the violation of the Practice of Medicine Act in the District of Columbia. The Society has recently found a diploma mill in New York, run by one Dr Conrad, who has come to be known in medicolegal circles as Conrad II. Dr. Conrad was the president, secretary, office boy and faculty of a medical school. For $100 a diploma in osteopathy was given, and for $550 a diploma in medicine. He had two branch establishments in the city. From papers found in his possession at the time of his arrest it is evident that he drafted the osteopathy bill, which gave so much trouble to the medical society at the last session of the legislature.

CONGRESS OF INTERNAL MEDICINE.

Twenty-first Session, held in Leipzig, April 18, 19, 20 and 21, 1904.

Arteriosclerosis.—Marchand classifies under arteriosclerosis all those arterial changes which lead to a diffuse or nodular thickening of the walls, especially the intima, and which are usually followed by fatty degeneration, sclerosis and calcification. The process is chiefly a degenerative one, though inflammatory and productive changes are common. Simple hypertrophy of the media and syphilitic arteritis of the medium-sized and small vessels should not be included, as they form distinct and separate processes. In arteriosclerosis the connective tissue growth is mainly hyperplastic and the increase of elastic tissue occurs by a splitting off of new lamellæ from the hypertrophied musculoelastic layer of the aorta or the elastica interna of the other arteries. Arteriosclerosis results from the mechanical factors at work during abnormal vessel-strain; these factors are caused by increased filling of the vessels and temporary or permanent rise of blood-pressure. But added to this there is always some local or general weakening, induced by general malnutrition, toxic or infectious processes, hereditary tendency, influence of temperature, etc. Sclerosis marked by degenerative and inflammatory changes above all in the media and adventitia of the thoracic aorta is caused in many cases by syphilis and the name productive mesa-ortitis is often applied to this condition. The first signs of arteriosclerosis show themselves in the elastic fibers of the musculoelastic layer of the interna and of the media of the aorta and in the elastica intima of the medium-sized and smaller vessels. The superficial atheromatous degeneration of the intima of the aorta in young individuals is already part of the process. Secondary to the degeneration of elastic fibers there will follow a compensatory, circumscribed or more diffuse hypertrophy of the intima. If the arteries of the extremity are found diseased, it does not necessarily mean that the aorta or other vessels are involved in the process. Not rarely arteriosclerosis is complicated by hypertrophy of the left ventricle owing to increased circulatory resistance and renal sclerosis. The importance of splanchnic arteriosclerosis in bringing about cardiac hypertrophy has been overestimated.

The subject arteriosclerosis was also selected by Romberg, who says that the most deleterious effect of the vessel-lesions upon the circulation is the loss of elasticity. The impediment caused by this and by the narrowing of the lumen is then compensated for by aneurism or dilatation. More work is rarely required of the left chamber since all vessels are hardly ever affected; in advanced sclerosis of the splanchnic vessels and of the aorta without aneurism there is, however, a moderate hypertrophy. In 90 per cent. of uncomplicated cases the blood-pressure is normal. The most common complicating lesions are seated in the heart, but coronary sclerosis is present in only a certain percentage where there is angina pectoris and cardiac asthma. The remainder suffer from the non-typical signs of a chronic insufficiency. In the kidneys there is a tendency toward chronic interstitial changes, which, when fully developed, will again react upon the heart. Cerebral signs often suggest neurasthenia at first and may later pass over into a psychosis. Involvement of the sensory organs and of the gastrointestinal tract is less frequent. In certain cases the vessels of the lower extremity are principally involved, giving rise to the interesting symptom-complex known as intermittent claudication. Important etiological factors in general are bodily exertion and nervous influences, beside these, alcohol, tobacco, coffee and tea are injurious, chiefly owing to the fluctuations in blood pressure which they bring about. Beneficial agents are rest rather than exercise, sufficient sleep, change of climate, indifferent or saline springs, restriction but not abstinence from alcohol, coffee, tobacco and tea. The diet should be simple and regular, without excessive amount of meat and spices, and fluids need not be cut off unless there is a tendency toward edema. Attention to the stool is a matter of prime importance. In the early changes, especially in the initial cerebral symptoms, in angina pectoris, etc., iodide of potash is of signal service, yet this drug is unable to correct anatomical changes, so that too much should never be expected. Small doses (three times daily half a gram) are best. There are no other specific remedies, though saltpetre has been recommended. In treating the kidneys, the attention should be

directed toward the heart: here the dangers of increasing the pressure are not as great as generally believed, but excessive rises must be avoided. In beginning stages of cardiac insufficiency and during convalescence from severe disease, mild carbonated baths are often excellent.

Practical Importance of Measuring the Blood-Pressure.—In estimating the blood pressure, one must distinguish between temporary and permanent changes. Thus, temporary falls are common in acute infectious diseases, especially tuberculosis and after tuberculosis injections. In valvular disease, chloralhydrate reduces the arterial tension only slightly, and can thus be given for days without bad effects. A transient increase in pressure is seen after emotional disturbances, and after the use of tobacco and alcohol. Bodily exertion will raise the pressure much higher after the use of alcohol than before. On the other hand, permanent high tension is common in arteriosclerosis and chronic interstitial nephritis. In some cases of this kind, the red cells are increased up to eight to eleven million, and as many are found in arterial as in venous blood. Increased pressure with diminished number of red cells was found only in nervous individuals. In conclusion, F. Geisbock demonstrated an interesting case of general plethora with increased pressure but without arteriosclerosis.

Experimental Arteriosclerosis.—The effects of constant change in pressure is best seen in the experiments of Erb, Jr. Three drops of adrenalin 1-1000 were injected daily into the ear-vein of rabbits; after six weeks the vessels showed diffuse or nodular thickening with calcification. Another animal received 10 c.c.m. of adrenalin during two months; the autopsy revealed an apoplectic focus in the brain, aneurism of the aorta and thickening with calcification of the remaining vessels. Fatty degeneration could not be found with the microscope, but the intima was strongly proliferated.

Blood-Pressure in Arteriosclerosis.—High pressure always suggests arteriosclerosis, though not always present in the disease. Gröbel goes so far as to state that it always signifies the advent of an interstitial process in the kidneys. The treatment calls for a regular mode of life and careful avoidance of all measures which lead to fluctuations in pressure. There is as yet no remedy which permanently lowers the pressure—not even the iodides or nitrates act in this direction. In cardiac insufficiency, the speaker gives small doses of digitalis even where the pressure is high. Massage, baths and gymnastics are frequently indicated if employed judiciously.

Arteriosclerosis and Life Insurance.—In looking over the records of life insurances, Bahrdt finds that 22 per cent. of patients die of arteriosclerosis or its complications, while the mortality of tuberculosis is only 7 per cent. Arteriosclerosis seems to be increasing during the last two years.

Pancreatic Lesions in Arteriosclerosis.—Hoppe-Seyler reports 16 cases of extensive lesions in the pancreas incident to arteriosclerosis; among these, six with marked glycosuria. In some, the vessels were so altered that thrombosis and obliteration were common; the parenchyma generally shows a growth of connective tissue which extends irregularly between the acini and does not spare the islands of Langerhans. There seems to be a definite relation between the severity of the glycosuria and the amount of tissue destroyed.

Method of Measuring Diastolic Blood-pressure. The usual instruments generally register only the systolic pressure and a method for measuring both systolic and diastolic does not as yet exist. Strasburger believes, however, that the instrument of Riva-Rocci may be employed since the diastolic pressure may be recorded when the radial artery becomes smaller with gradually increasing compression of the brachial. The importance of measuring both is evident since their difference corresponds to the height of the pulse. By dividing this "pulse-pressure" by the maximum pressure, a "blood-pressure quotient" is obtained which will give an idea of the relative work of the heart, the condition of the vessels and the blood-supply of the tissues—factors which generally can be obtained only by opening the arteries.

Discussion on Arteriosclerosis.—Kisch refers to the frequent coincidence of arteriosclerosis with limomatosis. Such cases often die of cerebral hemorrhage; the warning symptoms are bradycardia and irregularity of the pulse. Klemperer has seen arteriosclerosis very often among physicians. The lime contents of the blood is irrelevant, milk is desirable, alcohol injurious. V. Noorden believes increase of pressure is often high and the cause of many disturbances. He recommends a five per cent. alcohol solution of nitroglycerin up to 10 milligrams daily. The lime-metabolism does not differ materially from the normal, hence calcareous food need not be interdicted. Schott has seen arteriosclerosis in disease of the aortic valves before the age of twenty. The blood-pressure is often normal or subnormal. The use of nicotine seems to be a very important etiological factor. According to v. Jaksch, the neurasthenic symptoms are a result of the disease. He warmly recommends carbonated baths, sodium iodide in large doses once or twice weekly, with food poor in salt. Digitalis is dangerous and nitroglycerin should be employed with caution. A. Frankel states that arteriosclerotic angina is often secondary to acute infectious diseases, but is never observed in children. Obstruction and thrombosis of the mesenteric vessel often gives a characteristic symptom-complex marked by intermittent abdominal colic. Digitalis and morphine are most serviceable for cardiac asthma or arteriosclerosis, but should be used carefully in angina pectoris. Carbonated baths are also risky, since they may increase the pressure.

Examination of the Heart.—The phenomenon of diastolic pulsation of the chest wall of cases of mediastino-pericarditis which had been subjected to cardiolysis has been the object of special study by Brauer. By constructing a kymograph which definitely registers the curve, he could determine that the up-stroke does not correspond exactly to the diastole, but occurs somewhat later. An accidental sound which was formerly regarded as a bone-sound could also be heard despite the fact that the sternum had been resected, so that it is probably an auricular or split second sound. Typical diastolic pulsation is also seen occasionally in cases of shrinking kidney with beginning decompensation, but the systolic portion of the curve is different.

New Method of Examining the Venous Pulse.—By means of Mackenzie's polygraph, Deutsch could register the venous pulse, liver pulse, and apex-beat synchronously with the radial pulse. In the jugular curve, a carotid wave was found; before this a presystolic auricular, and behind this a delayed, systolic ventricular wave. The relation in size between the last two waves gives an idea as to the stagnation in the right heart, the degree of tricuspid insufficiency and the effect of contraction of the right ventricle and auricle. A purely ventricular (systolic with one wave) venous pulse gives a very grave prognosis since it shows that the over-dilated auricle has ceased to contract.

Determining Size of Heart. Orthodiagraphy is the only absolutely safe and accurate method of determining the size of the heart, except where there is much enlargement toward the left. De La Camp has also had

good results with deep percussion combined with palpation; in three-fourths of the cases the error is not more than three-fourths centimeter. Auscultatory percussion is inaccurate, since heart-shaped figuures can be obtained almost anywhere on the chest, and after death, where the heart has been removed.

Vessels in Typhoid.—In typhoid, Wiesel commonly found the tunica media of the vessels affected. During the height of the disease all the vessels of the body may show an increase of intramuscular connective tissue, atrophy of the smooth muscular fibers, and changes in the elastic fibers. The latter resemble the lesions found in myocarditis after infectious diseases.

Circulatory Organs in Typhoid.—In 38 cases of typhoid, Ortner discovered a distinct accentuation of the second aortic sound during a certain phase of the disease. The real cause of this is probably a relaxation of the peripheral superficial and deep vessels which also shows itself in dicrotism, pseudocelerity and pulsation of the small arteries. This relaxation would normally bring about a fall in blood pressure; since, however, the pressure was found normal a compensatory contraction of the splanchnic system probably occurs where the second aortic sound is not increased and an increased activity of the heart where it is. Death in typhoid follows from vasomotor paralysis and severe changes in the heart-muscle. A hitherto undescribed symptom is dicrotism of the capillary pulse. Similar conditions are found in influenza, miliary tuberculosis, pyemia and secondary lues.

Studies on Heart Action.—In a patient who had been subjected to an extensive thoracoplasty, so that the left half of the heart was covered only by skin, A. Hoffmann could induce extrasystolic contractions by means of the galvanic current. Other changes in rhythm occurred under the same conditions as in frogs and other mammals.

Exploratory Puncture of the Skull.—Neisser warmly recommends the exploratory puncture of the skull by means of electric drill. With care the dura is not injured and the large blood vessels are avoided. The aspiration of "old blood" will speak for extra or intradural hemorrhage, clear, albuminous fluid for cysts and pus for abscess. In cysts, simple aspiration may bring about a cure. In abscesses with doubtful location, aspiration may decide in which lobe of the cerebellum or if in the temporal lobe. The method is not absolutely harmless, but will often be indicated.

(To be Continued.)

BOOK REVIEW.

ROENTGEN RAY DIAGNOSIS AND THERAPY. By CARL BECK, M.D. D. Appleton & Co., New York and London.

THIS work forms an addition to the number of textbooks which have already appeared on this subject, but is supposed to differ from them in that it treats the field from a strictly clinical point of view. Consequently we find about two-thirds of the book given over to diagnosis of lesions in various parts of the body by the aid of the X-rays. This section is embellished by a large number of excellent illustrations original with the author. Considering the limitations of the half tone process, they are very good and in a work of this kind form one of the most important adjuncts in elucidating the text. The introductory section is devoted to the subject of technic and apparatus and a number of the author's devises are described. It seems that more attention might have been given to this section, as considerable doubt exists in the minds of most practitioners as to the necessary apparatus and its application. At the end of the book is appended a discussion of the other forms of light treatment, and in this the author states that in his opinion the Finson cannot, in its present stage of development, compete with the Roentgen method in value. It seems to us, however, that the status of these various agents is still too unsettled to admit of drawing any definite comparisons; it is probable that a limited field will be found for each. On the whole, the book may be regarded as an excellent introduction for the general practitioner of the value of this therapeutic agent, which has not yet been sufficiently recognized. He can feel, moreover, that the matter presented is based on painstaking research, for the author is an acknowledged authority in this field, was one of the earliest investigators in this country of the method and has most extensive personal experience.

BOOKS RECEIVED.

The MEDICAL NEWS *acknowledges the receipt of the following new publications. Reviews of those possessing special interest for the readers of the* MEDICAL NEWS *will shortly appear.*

A TEXT-BOOK OF PHYSIOLOGY. By Dr. Isaac Ott. 8vo. 563 pages. Illustrated. F. A. Davis Co., Philadelphia.

THE PHYSIOLOGICAL FEEDING OF INFANTS. By Dr. Eric Pritchard. Second edition. 8vo, 201 pages. W. T. Keener & Co., Chicago.

SURGERY OF THE HEART AND LUNGS. By Dr. Benjamin Merrill Ricketts. 8vo, 510 pages. Illustrated. The Grafton Press, New York.

A TEXT-BOOK OF HUMAN PHYSIOLOGY. By Dr. Albert P. Brubaker. 8vo, 699 pages. Illustrated. P. Blakiston's Son & Company, Philadelphia.

TEXT-BOOK OF PATHOLOGY. By Dr. Joseph McFarland. 8vo, 818 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

THE PRACTICE OF OBSTETRICS. By Dr. J. Clifton Edgar. Second edition. 8vo, 1153 pages. Illustrated. P. Blakiston's Son & Co., Philadelphia.

NORMAL HISTOLOGY. By Dr. E. K. Dunham. Third edition. 8vo., 334 pages. Illustrated. Lea Brothers & Company, Philadelphia and New York.

MENTAL DISEASES. By Dr. T. S. Clouston. Sixth edition. 12mo, 738 pages. Illustrated. Lea Brothers & Company, Philadelphia and New York.

TRANSACTIONS OF THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION. Volume 16. 8vo, 468 pages. Illustrated. Published by the Association.

THE DOCTOR'S LEISURE HOUR. By Dr. Chas. Well Moulton. 8vo, 352 pages. Illustrated. Saalfield Publishing Co., Chicago, Akron and New York.

PRINCIPLES AND PRACTICE OF GYNECOLOGY. By Dr. E. C. Dudley. Fourth edition. 8vo, 771 pages. Illustrated. Lea Brothers & Company, Philadelphia and New York.

HANDBOOK OF PATHOLOGICAL ANATOMY AND HISTOLOGY. By Drs. Francis Delafield and T. Mitchell Prudden. Seventh edition. 8vo, 885 pages. Illustrated. Wm. Wood & Co., New York.

THE MEDICAL EPITOME SERIES—SURGERY. By Drs. M. D'Arcy Magee and Wallace Johnson. Edited by Dr. V. C. Pederson. 12mo, 295 pages. Illustrated. Lea Brothers & Company, Philadelphia and New York.

A SYSTEM OF PRACTICAL SURGERY. By Drs. von Bergmann, von Bruns and von Mikulicz. Translated by Drs. Wm. T. Bull and J. B. Solley. Third volume. 8vo, 918 pages. Illustrated. Lea Brothers & Company, Philadelphia and New York.

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ORIGINAL ARTICLES.

HOME TREATMENT OF TUBERCULOSIS BY MEANS OF HOSPITAL DISPENSARIES.[1]

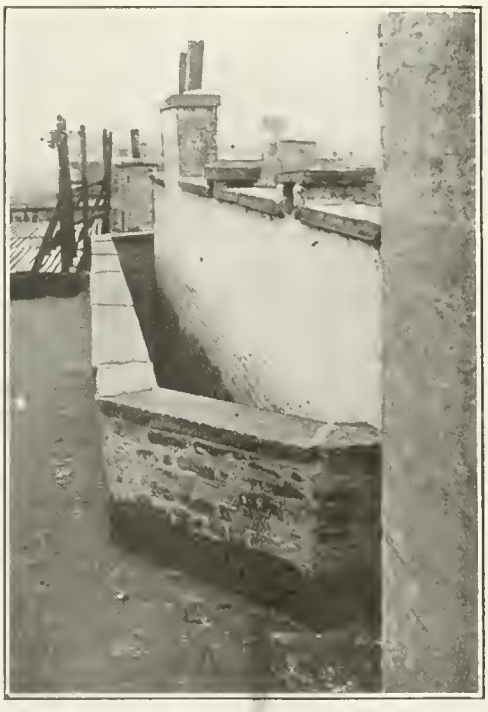
BY JOHN W. BRANNAN, M.D.,
OF NEW YORK.

THE gentlemen who were present at the meeting of this Association last year will remember the paper by Dr. Otis, on Dispensaries for Tuberculosis and the interesting discussion to which it gave rise. Unfortunately for myself I was not present at the reading of the paper, but entered the room as the discussion was closing. Dr. Otis, however, kindly sent me a copy of the paper soon afterward, and I was so much impressed by it that I at once set about establishing clinics for tuberculosis in the out-patient departments of Bellevue and its allied hospitals. At that time cases of tuberculosis in those hospitals, as in hospitals generally, were treated by those in charge of the general medical clinics. Dr. Otis and some of the other speakers last year referred to the difficulties they met with in organizing a special dispensary for tuberculosis. The chief difficulty in my experience was in finding properly qualified men who were willing to devote themselves to a clinic limited to tuberculosis alone. Finally, however, I succeeded in securing the man who was probably the best fitted of any physician in New York to take up this new work, Dr. James Alexander Miller. Dr. Miller, some six months before, had established at the Vanderbilt Clinic, at the instance of Dr. Walter B. James, a system of more careful management of cases of tuberculosis than had before been customary.

Fig. 1.

Bedroom from which patient was removed to No. 3.

Fig. 2.



Air shaft supplying light and air to bedroom in No. 1, at bottom of this shaft.

The main features of this system were special histories and regular weekly records of all cases, detailed oral and printed instructions in regard to the disease, free distribution of sputum pouches, and a visiting nurse, who made written reports of the home conditions and cooperated with the physician to make these conditions conform as far as possible to the hygienic requirements for the treatment of this disease. With

[1] Read at meeting of American Climatological Association at Philadelphia, June 3, 1904.

the kind permission of Dr. James, who recognized the larger field we had to offer, Dr. Miller came to Bellevue. He brought to us not only the experience acquired by him in the Vanderbilt Clinic, but also the interest and enthusiasm which, as Dr. Otis has said, are so necessary in this work. In return, we have placed all the re-

Fig. 3.

Bedroom to which patient was removed from No. 1.

sources of the hospital at his disposal, so that in addition to the means made use of at the Vanderbilt Clinic, he is supplied with milk and eggs for such patients as cannot afford to buy the extra nourishment required, and also the tent cottage that is shown in the photographs. The tent is in the open grounds of the hospital, upon

Fig. 4.

Patient on fire escape.

the banks of the East River, and is designed for those patients whom it is desirable to keep in bed because of elevation of temperature or for other reasons, or for whom a few weeks' training in habits of life seems desirable.

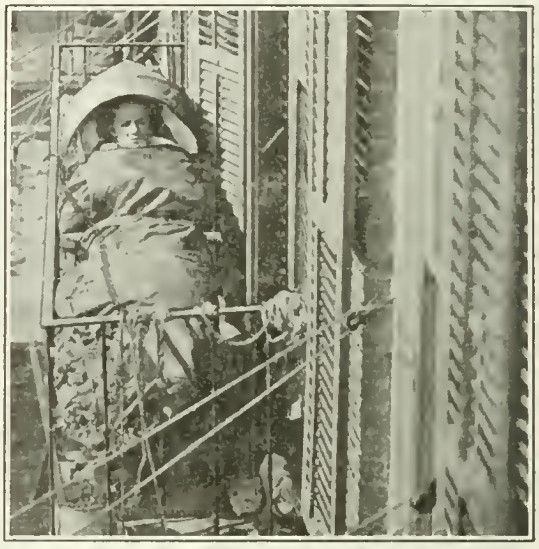
Dr. Miller has recently prepared a report of the work of the tuberculosis clinic for the first four months of this year, to be published in the Annual Medical and Surgical Report of the Hospital, and a summary of his observations may be of interest. The objects of the Tuberculosis Clinic as stated by him are as follows:

1. *Careful and Thorough Medical Attention* to each patient in a separate clinic by physicians especially interested and experienced in this disease.

2. *Systematic Investigation and Supervision of the Home Conditions* of each patient.

3. *Education of the Patients and Their Families* in the principles of good hygiene and the prevention of the spread of infection.

Fig. 5.



Another view of patient on fire escape. (See Fig. 4.)

4. *The Study of the Social and Economic Conditions in* connection with the medical aspects of each case and the relief and amelioration of those which are unfavorable.

5. *The Opportunity for Scientific Investigation* and clinical experience for physicians and students.

Fig. 6.

Patient in hammock on roof.

Taking up these objects in turn, let us see what has thus far been accomplished.

1. *Careful Medical Attention.*—When a patient is referred to this clinic he is sent to a

separate room for tuberculous patients, the temperature and pulse are noted by the nurse in attendance, and the history is taken by one of the physicians upon special forms upon which all the points to be investigated are printed. A careful examination is then made, including chest measurements, laryngeal examination, if at all indicated, and careful weighing with the patient stripped to the waist. The results of this examination are recorded on the history sheet, the physical signs by the graphic method. A positive, or even probable, diagnosis being made, the name and address are given to the nurse as a case to be visited. The sputum is sent to the Department of Health for examination. The patient is informed of the nature of his disease, of the principles of its treatment, and the dangers of infection, and printed circulars of instruction are given him for reference. The general principles of fresh air, rest, and extra nourishment

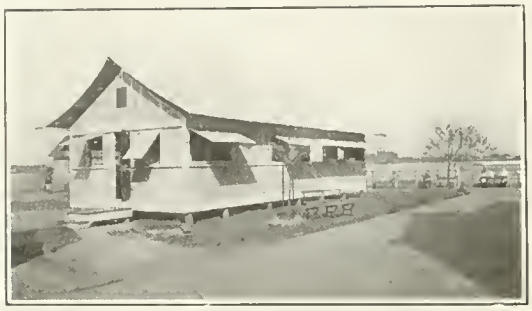
Fig. 7.

Patient in extension chair on roof.

are explained in detail. As a rule the diet advised is a mixed one, with two quarts of milk and four raw eggs additional each day. This number is gradually increased to the point of increase in weight or the tolerance of the individual, but the maximum quantity prescribed is about three quarts of milk and eight to ten eggs daily. The amount of fresh air and rest that these patients can obtain is, of course, very variable. It is almost always less than is desirable, but by persistent emphasis upon their importance much can often be accomplished.

Medication plays a minor rôle in the plan of management. Cathartics are most necessary during overfeeding, and stomachic tonics are very useful. Cod-liver oil is given freely as a food during the winter months. Creosote is very seldom prescribed. Symptoms such as distressing cough, pain, night-sweats, etc., must be relieved. The general principle, however, is to use as little medication as possible. Pocket sputum pouches, and more substantial ones for home use, are given to each patient from the drug room. Patients are requested to return to the clinic once a week and a record of their weight, temperature, pulse and general condition is made at each visit. Careful physical examination is made at least once a month, but, of course, as much oftener as any indication suggests.

Fig. 8.



Tent at Bellevue, showing proximity to river.

2. *Thorough Investigation and Supervision of the Home Conditions* of each patient. This is best accomplished by means of visiting nurses who have had special training in district nursing as well as hospital work. At Bellevue there are two such nurses, Miss Damer and Miss Hopkins. Both are graduates of the Bellevue Training School and both have been active and successful in district work, the former with the Buffalo Charity Organization Society, the latter with the Charity Organization Society of New York. Under their direction one of the pupil

Fig. 9.

Tent at Bellevue, looking west.

nurses also helps in this work, which thus becomes a part of her training. Each new case is referred to the nurse, with any special instructions or information that may be thought advisable, and, after a thorough inspection of the home, a report is made out by her upon printed forms provided for the purpose and submitted to the physician in charge of the case, together with any suggestions which may occur to her as a result of her visit.

The general plan is to arrange the whole domestic economy to the best interests of the patient

and to provide against the dangers of infection to his household and associates. Careful and detailed instructions are given as to ventilation and the principles of fresh-air treatment, and practical demonstration is made of the proper method of disinfection of the bed clothing, eating utensils, and personal linen of the patient; also any necessary suggestions are made along the lines of general cleanliness and better hygiene. Thorough inquiry is made concerning the care which the patient habitually takes of his expectoration, and notice taken of the general attitude of the whole household toward the instructions given at the clinic. Investigation is made into the available facilities for taking a "rest cure" out of doors, and the fire-escape, the roof, and the nearest park are all considered from this point of view, and the results incorporated in the report. For a few patients we have been able to secure sleeping bags, reclining chairs, or hammocks, so that they may stay out of doors almost continually. (See photographs 4, 5, 6, and 7.) The family resources are also noted and recommendations for assistance are made accordingly. Oftentimes the "home" is absolutely unsuited to our purpose; if so, it is so stated and the actual conditions existing are described. Photographs 1, 2 and 3 show how the home conditions of the patient may be bettered by simply moving him from a dark interior bedroom to the sunny parlor of his own apartment.

3. *The Education of the Patients* and their families in the principles of good hygiene and the prevention of the spread of the infection. How this is accomplished by the constant reiteration of sound advice from physicians, nurses and printed circulars is apparent. During the past four months our nurses have visited 138 patients whose aggregate families number 621. Each one of these individuals is now a center of information in regard to the general principles of healthful living.

4. *The Study of Social and Economic Conditions* obtaining in each case. This means the correlation of all the available data obtained from the investigations of the physicians and of the nurse. Upon this study the physician bases his method of management of each case. This involves upon the part of the physician an intimate knowledge of all available resources. In our work we keep in close communication with all the sanatoria and hospitals which admit tuberculous patients and attempt to send suitable cases to the institutions best adapted to their needs. The regulations of the Health Department and Tenement House Department are studied and observed; the facilities offered by the Charity Organization Society, the United Hebrew Charities, the Association for Improving the Condition of the Poor, the various churches and religious societies, the Diet Kitchen Association and the Straus Milk Depots are all well known and constantly utilized. In addition milk and eggs from the hospital storeroom are given free to such patients as are found to be unable to sufficiently provide for themselves. Lately a tent cottage has been erected upon the hospital grounds, accommodating twelve patients, which is for the use of those patients in the clinic whom it is desirable to keep under observation temporarily, or for favorable cases for whom proper sanatorium or home treatment is not possible. The proper use of all these means is an essential portion of the treatment, and the responsibility for it rests with the physician, from whom it requires careful study and judgment.

5. *The Opportunity for Scientific Investigation* and clinical experience for physicians and students. This portion of the work has not yet been developed. It is proposed to take it up systematically next autumn and it is hoped that tuberculosis will be studied in this clinic along various lines.

The activities of Dr. Miller have been, in the main, limited to Bellevue, but we have fortunately been able to find capable and well-trained physicians to take up the work at some of our other hospitals. This is particularly true of Gouverneur, where a tuberculosis clinic was organized last October by two young women physicians, Dr Stella S. Bradford and Dr. N. G. Seymour. As a result of their efforts the number of cases has grown from one or two a day to ten or twenty a day. During the month of April 24 new cases were enrolled. The methods of management are very much the same as at Bellevue, except that we have not as yet obtained a trained nurse to visit the patients regularly at their homes, but we hope very soon to supply this deficiency.[1] Dr. Bradford has just submitted a report on the work at Gouverneur, which will be published in our annual report, along with that of Dr. Miller. Working under trying conditions that would have disheartened most men, she and her colleague have accomplished results almost equal to those obtained at Bellevue. In commenting upon the intelligence of some of the population of the East Side, Dr. Bradford cites the cases of the man who with perfect equanimity upset his sputum bottle in his pocket, and the woman who, on being told to hold her hand before her face when she coughed, promptly spat into it!

At Harlem Hospital, where the dispensary service is very heavy, a separate clinic for tuberculosis was opened three months ago, but the number of patients does not yet compare with that at Bellevue and at Gouverneur. Fordham, our fourth hospital, lies in the outskirts of the city, where there are but few out-patients, and no attempt has yet been made to separate the tuberculous from the other patients. We have asked Dr. Miller to supervise the work at all four hospitals, so that each may profit by the experience of the others, and at our meeting of next year I shall hope to present a report of the

1 Since this paper was read an experienced nurse has been assigned to Gouverneur Hospital.

work more worthy of your attention than these rather disjointed notes of to-day.

I have been asked to say a few words as to results. Of course it is too early to talk of cures or even of arrested cases under a system of treatment which has been in force less than a year and with cases numbering less than 300. At Gouverneur, of the patients who have been under continuous observation, two-thirds have shown a gain in weight, and to-day I received a letter from Dr. Miller, in which he stated that of the patients in the tent cottage at Bellevue, all but one had gained from six to fifteen pounds in weight, with a corresponding improvement in all the other symptoms. The woman photographed in the steamer chair on the fire-escape had gained fourteen pounds in six weeks, though she had been considered a hopeless case. When in the course of the next year or two we shall be prepared to make a report, the results will no doubt be such as have been obtained elsewhere from the use of fresh air, rest and extra nourishment, combined with special study of the conditions of each individual case.

BONE AND CARTILAGE IN THE TONSIL.[1] [2]

BY JAMES E. NEWCOMB, M.D.,
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THE interest of the writer was first called to this subject some years ago by the paper of Stirling, hereinafter referred to, and a record has been made of the few instances of the condition since appearing in current literature. This interest was renewed two years ago by a personal experience, briefly as follows:

A woman of about thirty years, nurse, came for consultation in regard to frequent though slight sore throat. Examination showed moderately enlarged faucial tonsils. Their removal was advised and agreed to by the patient. The Mackenzie instrument was employed and the right tonsil removed without incident. A few days later the operation was repeated on the left side and as the blade of the instrument was driven home, the sensation was experienced of driving through some hard substance which, however, was easily pierced. Examination of the tissue removed revealed the presence of a small rounded tip of bone. Palpation of the tonsillar stump at once showed that this tip belonged to the styloid process, the remainder of which could be easily made out. It came nearly to the surface of the stump, but was covered thereby sufficiently well to prevent irritation, as was verified by a very recent examination. Palpation on the right side did not reveal anything abnormal. The case was therefore one of abnormal length and direction of the left styloid process, the tip of which had been removed by tonsillotomy.

Under normal conditions the styloid process has a length of 2½ cm. and extends from the under surface of the temporal bone downward, forward and inward. It is derived from the second branchial arch.

The recital of an unusual clinical experience is apt to start up other similar recitals, so that it soon becomes evident that a condition assumed by the first reporter to be rare is in reality quite common. It is not possible to say just how common the anomaly described really is. As a matter of fact but few instances are on record. One of the most striking is that of Richards, who, in the case of an elderly woman, found himself unable to sever the tonsil with a tonsillotome. Palpation showed a hard mass calling for the use of bone forceps. After this the tonsil was easily severed. The same condition, though to a less marked degree, was found on the other side. In Richards' case it was possible for him to detect bone marrow in the fragment removed. He appends a note from Prof. Thomas Dwight, of the Harvard Medical School, who states that ossification frequently extends down the stylohyoid ligament, thus apparently lengthening the process proper. To reach the level of the tonsil a length of from 5 to 6 cm. of bony structure would be necessary.

Three cases were reported by Stirling some years ago. Case I was that of a young woman with cheesy matter in the tonsilar crypts. On the right side there was a hard mass coming from behind the tonsil forward underneath it to the level of its anterior surface, ending in a point and forming a part of the side of the organ. The point was rounded and about an eighth of an inch in diameter, but broader and somewhat flattened laterally as it extended backward, outward and slightly upward. The finger in front entered the angle formed by it and the inferior maxilla and when pressed behind it entered another angle formed by its proximity to the right side of the vertebral column. There was present a tenderness from the pinching of the mucosa between the body and the finger. The second patient showed a slight protuberance just above and in front of the right tonsil; otherwise it was like the first case, but the condition was bilateral. The third patient was a brother of the second patient. Here also the condition was bilateral. The hard masses were altogether in the posterior portion of the tonsil and reached a level a full finger's breadth below the lower border of the organ. The mass in the third patient was more slender than in the other two cases, was distinctly cartilaginous in feel and was movable. In making his diagnosis, Stirling excluded calculi as not giving the conditions present; the masses might have belonged to the jaw but did not move with it. The finger could exclude the vertebral bodies. The masses were too far forward to come either from the base of the skull or to be regarded as spines on the posterior portions of the sphenoid wings. He concluded that they must be either the transverse processes of the vertebræ or the styloid processes and finally decided in favor of

1 Paper presented at the Twenty-sixth Annual Congress of the American Laryngological Association, held at Atlantic City, June 2 to 4, 1904.

2 Received for publication May 31, 1904.

the latter. He found one reference to the condition in Schech's book and references by the latter author to cases reported by Grube, Lücke and Weinlechner, but these reports were not accessible to the writer.

I do not know that any great importance attaches to the condition unless the projection should be long enough and the direction of the styloid process oblique enough to cause tonsillar irritation. In most, if not all, the cases reported the abnormality has been discovered accidentally. If after tonsillotomy the stump should not be sufficiently padded by the soft tissues there might be a condition awkward to relieve, but such relief could undoubtedly be afforded by the use of bone forceps, as in Richards' case. In the comments of Professor Dwight on Richards' case he notes that "it is perfectly in accord with all we know of the process of growth of organs that if a bony structure should encroach on the domain of adenoid tissue the latter should, so to speak, fold itself around it."

When we come to the question of bony deposits scattered through the tonsils we find a more voluminous literature, as the subject has been considered by several authors who have also found cartilage and have considered the two conditions together. Personally I have removed tonsils which on inspection showed masses too large and too hard to be regarded as foci of connective tissue and I have surmised that they might be cartilaginous, but this view has never been confirmed by microscopical examination.

Several years ago Walsham reported two cases bearing on this matter. The first patient was a man of fifty years whose senile tonsil showed scattered through it, at the base of the crypts, numerous small bony masses in the shape of nodules, rings and trabeculæ. They did not encroach on the lymph structure of the organ. The second case was that of a patient with an atrophied tonsil, a man of twenty-seven years. Through the lymphoid structure of the organ were scattered masses of cartilage large enough to be detected by the eye. In places it had been converted into bone. The matrix appeared sometimes hyaline, at other times fibrocartilaginous. The cartilage was in the form of nodules surrounded by strands of dense fibrous tissue which formed a sort of perichondrium. Some penetrated the lymphoid tissue and in one place they nearly reached the epithelial covering. Walsham regarded them as enchondromata, finding a close analogy between them and the small cartilaginous growths which sometimes develop about the branchial clefts and which are also found in the neighborhood of the ears; also analogous to the cartilage found in the parotid gland.

According to His, the tonsil is developed in the fourth month of fetal life by a simple infolding of the mucosa at a spot between the second and third branchial arches. This site remains visible in the adult tonsil as the operculum or triangular fold, which frequently extends over from the anterior faucial pillar, veiling the tonsil's antero-lateral aspect. As development progresses the primary infolding, which is the original lacuna, splits at its base into secondary lacunæ and the fully formed organ results from the swelling of the mesoblastic tissue and the early appearance of the lymph follicles. According to this view, the cartilage is of fetal origin, *i.e.*, is the vestigial rest of the second branchial arch. From this view Kanthack dissents, regarding the cartilage merely as a metaplasia of fibrous tissue. The enchondromata result from the starting up to renewed growth of these vestigial rests.

Walsham was able to find two similar cases reported by Roth and one by Deichert, who himself knew of two other cases. Walsham found the condition twice in thirty-four autopsies.

Wingrave found cartilage three times in examining two hundred tonsils. He regarded these deposits as identical in formation with the subpharyngeal cartilage of Luschka. As did Walsham, he found hyaline and white fibrocartilage imbedded in a dense connective tissue capsule, sometimes in the fibrous bed, sometimes in the lymph pulp of the organ. In one instance the cartilage was calcified.

Nösske found multiple bone and cartilaginous deposits in the deeper layers of connective tissue coating the tonsil. There was almost always a connection with the surrounding connective tissue as well as numerous transition pictures between the two. This author would include in etiology, inflammation, retrogressive changes and a sort of local predisposition.

Petroff examined the tonsils excised from a patient who had died of pulmonary tuberculosis, finding tuberculous foci and cartilaginous deposits as well. Further investigations on 40 tonsils removed from 22 cadavers of both sexes and varying ages revealed cartilage and bone in eleven, cartilage alone in ten and bone in one. All the tonsils showed a fibrous degeneration. He regarded the condition as due to a chronic inflammation with proliferation of connective tissue and deposit of lime salts.

Reitmann refers to the work of Pollak, who explained the formation of bone on the basis of "cretification" of tuberculous foci after an inflammatory process. To the process he gave the formidable name of "Amygdalitis hemorrhagica interstitialis chronica ossificans." Reitmann himself refers to 12 cases collected by various authors and examined three human embryos together with 50 tonsils removed from 37 individuals, the age limits being an embryo of thirteen weeks and a living patient of sixty-five years. Of the tonsils, 17, or 34 per cent., gave a positive result, showing that the condition may be more frequent than is generally supposed. His general conclusions are as follows: Cartilaginous nodules or their derivatives occur in the tonsils or surrounding tissues. They are generally hyaline, rich in cells but poor in basement substance, that is, resemble embryonal cartilage. In two instances retrograde changes were evident. Various stages of transformation from bone to cartilage

were found. Cartilage always lies free from any attachment to the skeletal frame. The condition found in one of the embryos allowed him to believe that he had to do with a derivative from the second branchial arch, arising not in continuity but as an offshoot. He does not regard this theory of origin as positively proven by any evidence thus far brought forward, nor is he certain that these vestiges can serve as a starting point for either enchondromata or osteomata.

Very recently Zuckerkandl has stated that cartilage develops independently of the skeleton in the connective tissue of organs when mechanical relations demand the presence of such tissue, as for instance in the Eustachian tube. In many of the lower orders of life only fibrous tissue is found in this latter structure. He reports the interesting fact of finding in a pharyngeal tonsil removed from an adult lion, first, a superficial adenoid layer; second, a connective tissue layer, and third, glands between the two. In the connective tissue layer cartilage were found between the glands and follicles. It is not a constant feature in this animal as it was absent in a dead-born animal and also in an embryo.

An interesting case has been studied by Rosenberg and Töpfer, the former reporting the clinical and the latter the histological details. A peculiarity of the case was that it was the first one in which muscular fibers were found in the tonsil. They appeared in the connective tissue capsule of the organ and certain of them had thrust themselves into the trabeculæ running in from the capsule. Töpfer considered them as belonging to that group called "musculi tonsillares," which normally are on the outside of the capsule. The tonsil showed hyperkeratosis and it is surmised by the writer named that the fibers were the cause of irritation to the tonsilar substance resulting in the hyperkeratosis. In the same organ were found foci of hyaline cartilage in the connective tissue portions. Against the theory that these were due to developmental disturbances during fetal life, that is, of the branchial arches, is the fact that first development of the tonsil begins between the fourth and fifth month, at a time when little or no vestiges of the branchial arches remain. Moreover, the cartilage was found in the purely connective-tissue portions only of the organ, never in the lymphoid pulp and, finally, the deposits were multiple. In a second tonsil, two larger deposits were found and here could be recognized the transition stages in the change from connective tissue to cartilage. The fibers of the latter separated, allowing the cells to project, then swelled, forming a network in the meshes of which were the cartilaginous capsules in which the cells lay. These had gone over from the spindle-shaped to a more polygonal form. How long this process may require, and what is its exciting cause, we have no means of knowing.

Töpfer observes that if the cartilaginous foci are merely aberrant deposits from the branchial arches we ought to find them in all sections of the organ, but we do not so do. Or, it might be supposed that they had spread out through the tissue into which they had grown. Against this view was the fact that each deposit stood by itself with its fibrous envelope, that is, the assumed perichondrium, but everywhere there was a certain connection between the cartilage and its connective tissue environment. Hence Töpfer's main proposition is that the deposits result from connective tissue metamorphosis. In some sections the transition seemed to have gone farther than above described, so that it appeared as if the groundwork of bone had been laid down preparatory to the deposition of lime salts.

With certain staining agents pictures were seen suggesting an earlier colloid state, later a mucoid state. It is difficult to say whether or not this mucoid stage is a transition between colloid and the material out of which hyaline cartilage is formed. The whole process may be a retrograde one, that is, the retrogression of cartilage into mucoid material. Evidence suggesting this was found in the fact that in the middle of the areas out of which the cartilaginous deposits originated, there was a focus of softening or a small hollow filled with mucin and some round cells.

This transition from connective tissue to cartilage is not, according to Töpfer, to be looked on as a late or senile change in the former, for the same process has been found in children. Since the deposit comes from a cartilaginous matrix, it must be regarded as an enchondroma, while the hyperplastic mass from which comes the pre-existing connective tissue is an ecchondrosis.

The author just named thinks that the results of examination of tonsils vary according as the organs are removed from the cadaver or the living body. Virchow has suggested that the connective tissue which has newly formed itself as the result of chronic interstitial processes is the matrix of the later enchondroma. Owing to the numerous inflammatory processes going on in the tonsils it is conceivable that cartilage should arise on the same basis. Wingrave found cartilaginous nodules in chronic hyperplastic organs, but other observers have found them in normal organs.

Finally, it may be noted that the Eustachian tube is formed from the first branchial arch; a portion of the cartilage might be shut up in the tonsil, since, according to Kölliker, the first position of the tonsil is in a line with the tube, but somewhat more dorsal. Zuckerkandl found cases showing cartilaginous nodules in the vicinity of the tubes, especially in the salpingopharyngeal ligament.

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THE DISTINCTION BETWEEN FRACTURE OF THE NECK OF THE FEMUR AND EPIPHYSEAL DISJUNCTION IN EARLY LIFE, WITH REFERENCE TO ITS INFLUENCE UPON PROGNOSIS AND TREATMENT.[1]

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My contention that fracture of the neck of the femur is relatively common in early life, is now generally admitted, but there is a strong tendency among German writers to class these cases as epiphyseal separations rather than simple fractures. Hoffa, for example, in a recent article (*Zeitschrift f. Ortho. Chir.,* Vol. II, 1903), has collected eighty-four cases from literature, including ten reported by me in 1897. Of these but four are admitted to be true fractures. In other words he would consider all cases of this type as epiphyseal fractures, unless it can be directly demonstrated, as by operation or autopsy, that the injury is not at the epiphyseal junction.

It might seem perhaps that as both forms of injury are properly classified as fracture, the exact situation is unimportant. In fact, I should not again protest against this classification, however unwarranted it may be by the evidence were it not that an accurate diagnosis may have a deciding influence upon the treatment. It is well known that epiphyseal disjunctions in other situations are uncommon as compared with fracture in early life, as is well illustrated at the elbow-joint. It is difficult to produce an epiphyseal disjunction experimentally, even when the force is adjusted with this end in view. If then, epiphyseal separation is relatively so common at the hip-joint, it can be explained only by anatomical or pathological predisposition. Anatomically there is no predisposition, since the neck is much smaller than the junction. Even when fracture occurs during the reduction of a congenitally displaced femur, the manipulation which of all others should induce separation, the clinical evidence is in favor of fracture of the neck. And this fracture was demonstrated in the only case that to my knowledge has come to autopsy. (Wilson and Rugh, *Am. Jour. Ortho. Surgery,* February, 1904.)

An epiphyseal junction is not a weak point in the bone during childhood unless as the effect of local or general disease. It is however, relatively weak in adolescence, as the period of consolidation approaches, when the protecting rim of cartilage which covers it has been reduced to an approximately adult thickness. In fact, it will be found on investigation that nearly all the anatomical evidence in favor of epiphyseal separation dates from the two cases reported by Sprengel, (*Archiv für klin. Chir.,* B. 47, 1898, S. 805.), of patients aged respectively seventeen and eighteen years, and is of similar character, that is to say an evident predisposition to this particular form of injury was present.

[1] Read before the American Orthopedic Association, June 9, 1904.

Admitting that either epiphyseal separation or fracture may occur as the result of violence, the following are the chief distinctions between them, and in introducing the subject it should be stated that although complete fracture and, in rare instances, complete separation of the epiphysis may occur, it is far more often incomplete and it is this class that is under especial consideration.

Fracture of the neck of the femur is usually the result of direct violence. The majority of the patients are healthy children. The disability is immediate; it lessens as repair proceeds and in a few months the patient may be practically well except for a slight limp and limitation of motion dependent upon the depression of the femoral neck (traumatic coxa vara). Epiphyseal disjunction is usually a more gradual process. The patients are almost always adolescents, very often of the overweighted or overgrown type. The injury is often slight, of the nature of a twist or strain or misstep, so slight in fact that it may pass unnoticed. The first symptoms are limp, slight stiffness, and discomfort rather than pain referred to the hip and thigh. These symptoms may persist for weeks or months then, usually after overexertion or other injury, the disability may suddenly increase, an indication of a more extensive secondary fracture.

It may be noted then that in childhood fracture of the neck of the femur caused directly by violence does not differ essentially in its history or symptoms from impacted fracture in the adult, except that the disability is less and recovery more rapid. On the other hand, the characteristic symptoms of partial epiphyseal separation and the class of patients in which it is most common resemble closely those of adolescent coxa vara.

There is also a well-marked distinction in the physical signs. In traumatic depression of the neck of the femur, there are shortening and outward rotation of the limb with elevation and prominence of the trochanter. Motion may be practically free except in abduction which is much restricted, particularly when the limb is flexed.

In partial epiphyseal separation the outward rotation of the limb is more marked, but the shortening is less, usually not more than half an inch. As a rule the limb is completely extended and in many instances a resistant swelling is apparent in Scarpa's space. The trochanter is not as prominent, but motion is much more limited than in fracture. In many instances it is almost completely restricted by muscular spasm, and there may be effusion within the joint and sensitiveness to pressure.

The distinction between the symptoms and physical signs in the two classes of cases may be explained by the situation of the injury and its effect upon the function of the joint. If the neck of the femur is forcibly depressed as the effect of an incomplete fracture at some distance from its articulating extremity, motion, when repair is advanced will not be restricted other than by the distortion of the neck, thus primarily in abduction, inward rotation and, to some degree, in

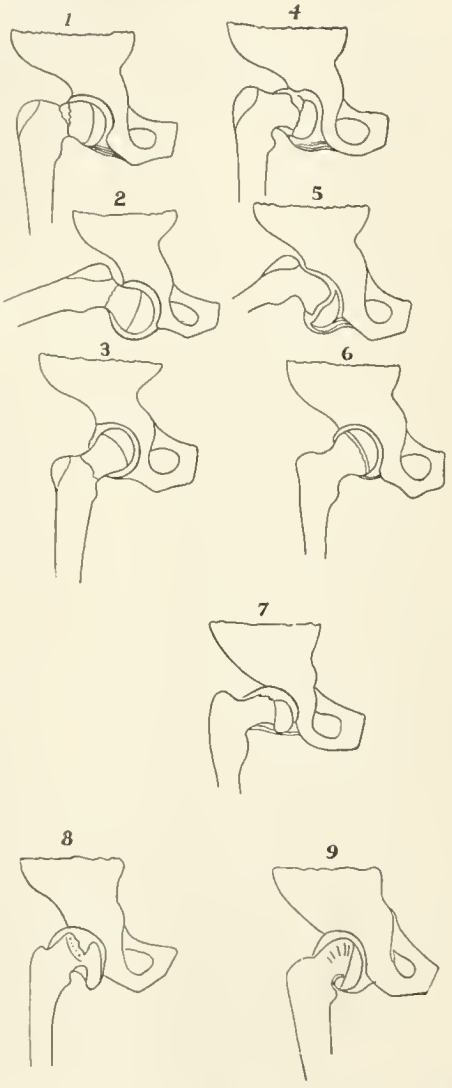
flexion. Corresponding to the depression of the neck there are of course shortening of the limb and an abnormal projection of the trochanter, which may be made more noticeable by flexing and adducting the thigh. If, however, the epiphysis, forming the cartilaginous extremity of the bone, be displaced, as it usually is in these cases, downward and backward, there is direct interference with the movements of the joint, increased by the sympathetic irritation about the injured part. The neck of the femur projects from the shaft at the normal angle. The epiphyseal extremity remains within the acetabulum and it is the upper and anterior extremity of the neck that forms the projection in Scarpa's space.

In some instances the downward displacement of the epiphysis which is still firmly adherent to the neck, may not be greater than a quarter of an inch, and although the characteristic symptoms may be well marked, shortening may be practically absent. Even in these early cases the muscular spasm may be so great that the joint may be practically fixed. The symptoms in fact, very closely resemble those of disease of the joint except that the limb is usually completely extended and pain is absent when the patient is at rest; whereas flexion is the almost invariable attitude of disease and neuralgic pain is a common symptom. In this class of cases the original injury may have caused simply a rupture of the protecting covering at the epiphyseal junction, and in the absence of further injury it is possible for complete recovery to take place. In most cases, however, as the patient continues to use the limb, this displacement is progressive, being accompanied by a process of partial repair; thus the head of the bone is usually firmly adherent to the neck.

It is apparent that the history and the symptoms that have been described resemble those of coxa vara rather than of the ordinary form of fracture. It may be mentioned also in this connection that there are two classes of coxa vara, one in which the entire neck is depressed, and the other in which the deformity is in the newly formed bone on the outer side of the epiphyseal cartilage. In this latter class the symptoms may be aggravated by actual fracture at the point of weakness, and in such cases it is practically impossible to distinguish accurately between these and true primary traumatic epiphyseal separation. In fact, it is probable that many of the cases reported as epiphyseal separation are of this type.

In many instances it is possible to demonstrate the seat of the injury by means of the X-ray. In ordinary fracture the neck as a whole is depressed, while in epiphyseal separation one can often distinguish the neck projecting at a normal angle from the shaft, the deformity showing clearly at its inner third.

One may conclude then that when fracture at the hip-joint follows a fall from a height, or other considerable violence, the injury, as in older patients, is usually of the middle or outer portion of the neck. In adolescence on the other hand, when progressive disability follows slight injury and when the physical signs are similar to those described, one may suspect fracture at the epiphyseal junction.



1. Fracture of the neck of the femur. 2. Restoration of the normal angle by forcible abduction. 3. The limb in normal position. Figs. 4, 5 and 6 illustrate complete separation of the epiphysis of the head of the femur treated by the same method. 7. Illustrates slight separation in which protection might assure a satisfactory result. 8. More extreme displacement, that can only be treated by direct operative reposition. This contrasted with fracture of the neck (Fig. 1) illustrates the greater disturbance of joint function that must inevitably result. 9. A form of epiphyseal coxa vara often induced or aggravated by injury in which the deformity is most marked on the outer side of the epiphyseal cartilage.

As has been stated, the importance of an accurate distinction between the two forms of injury may have a direct influence upon treatment, assuming that its object is the restoration of normal form rather than palliation of the symptoms. If the neck of the femur has been forcibly depressed and partly broken through, the rela-

tions of the head of the bone and the acetabulum are not particularly disturbed. If then, one has the opportunity to treat such a case before consolidation is completed one may, by forcibly abducting the thigh and utilizing the upper border of the acetabulum as a fulcrum, actually restore the normal angle. If the limb be fixed for a sufficient time in a plaster bandage at the limit of normal abduction, anatomical and functional cure may be assured. Or, if consolidation is complete, one may, as in simple coxa vara, restore proper elevation of the neck by the removal of a wedge of bone at the base of the trochanter. Both of these procedures have been described by me in papers read before this society.

The importance of remedying depression of the neck of the femur which usually leads to progressive distortion, as contrasted with palliative treatment by support, is sufficiently evident. If, on the other hand, the articulating extremity is actually displaced, even to the extent of one-third of its area, the mutual relations of the bones are so disturbed that the function of the joint is seriously impaired. In such cases, as has been stated, the displacement is usually so gradual that it is accompanied by partial repair; it seems hardly probable therefore that forcible abduction could have very much effect in directly reducing the displacement. In this class of cases direct operative intervention is the treatment of selection, except in those unusual instances in which the displacement is so slight that it does not materially interfere with function. In cases of this character, support during the period of weakness would assure a cure. This emphasizes the importance of a careful examination in all cases of injury at the hip joint in childhood.

Operative treatment in this class should be directed to the exact replacement of the head of the bone, or, in the slighter cases, to the removal of the angle formed by the inner extremity of the neck which interferes directly with flexion. The treatment of the two forms of injury may be illustrated by cases where it has been applied.

Case I.—A boy, eight years of age, was brought to me by his family physician in October, 1901. Three weeks before he had fallen a distance of fifteen feet injuring the left hip. A few days later he was able to limp about, but there was no further improvement. On examination the typical symptoms of fracture were present, viz., the trochanter was elevated and prominent, there was one-half an inch of actual shortening and marked limitation of abduction. When the patient was anesthetized abduction was found to be limited to one-half the normal range by direct bony impact. Under traction the limb was slowly and forcibly abducted to the normal limit, the resistance giving way under direct pressure. The limb was fixed by a plaster bandage in the attitude of extreme abduction. In a few days the patient began to walk about and at the end of four months, when the spica was removed, the X-ray picture showed a restoration of the normal angle. Later examinations have demonstrated a functional and anatomical cure.

Case II.—A girl, six years of age, was seen in August, 1902. Three weeks before this time she had fallen from a second story window and as complete disability persisted she was brought in arms to the Hospital for Ruptured and Crippled. The physical signs, the treatment and the final results were practically identical with those of the previous case.

Partial traumatic epiphyseal separation may be illustrated by two cases which will demonstrate the contrast both in symptoms and treatment.

Case I.—A girl, fifteen years of age, began to limp and to complain of stiffness about the right thigh. No cause could be assigned other than a slight fall which was not accompanied by immediate symptoms. Eight weeks later, as the disability became more marked, she was admitted on November 23, 1903, to the Hospital for Ruptured and Crippled. The patient was of the overgrown adolescent type. The disability was complete, the limb was fixed in extension and rotated outward, there was marked muscular spasm with pain on passive motion. The shortening was not greater than a quarter of an inch. Diagnosis of partial epiphyseal separation was made and the joint was opened by the ordinary anterolateral incision. The epiphyseal extremity of the femur was found to be displaced downward and backward for about a quarter of an inch, exposing a sharp angular projection of the extremity of the neck. There was congestive synovitis which accounted for the muscular spasm, and the projecting bone interfered directly with the movements of the joint, particularly in flexion. This projection was removed with a chisel, the wound was closed and a plaster-of-Paris bandage was applied. This was removed six weeks later and the patient began to go about on crutches. At the end of three months she was allowed to use the limb and at the present time there is no disability on walking. Flexion is still limited, but not to a sufficient degree to interfere with function.

Case II.—This patient, a tall boy fifteen years of age, was dragged for half a block by a street car. He suffered more or less discomfort about the right hip, but continued at his daily work for two months when the stiffness and limp had so increased that he was practically disabled. He was admitted to the Hospital for Ruptured and Crippled on December 28, 1903. A diagnosis of epiphyseal separation was made on the following grounds: One-half an inch of shortening, marked outward rotation of the limb, which was fixed by muscular spasm in an attitude of extension, a resistant swelling was apparent on the anterior aspect of the joint. The joint was opened by the anterolateral incision and the inner extremity of the neck, which had caused the swelling already mentioned, presented itself. On extreme outward rotation the upper and anterior portion of the cartilaginous covering which had been displaced downward and inward could be

seen, still firmly adherent to the under third of the neck. A section of bone was removed from the neck, sufficient to allow a thin chisel to pass between it and the head. With this the epiphysis was completely separated and while it was pressed forward the limb was rotated inward until the head was exactly replaced. The wound was closed and a plaster-of-Paris bandage applied. At the end of six weeks the boy was allowed to go about on crutches, and soon after the plaster bandage was removed. The limitation of movement that followed the operation gradually lessened, and at the present time there is complete anatomical and functional cure.

These contrasting cases illustrate the importance of exact diagnosis and appropriate treatment, since it is evident that forcible abduction would have been useless in the cases of epiphyseal separation and that the open operation would have been unnecessary in the cases of fracture of the neck of the femur. The ease with which the head of the femur was replaced in the second case of epiphyseal separation and the complete cure that followed, indicate that this operation should always be performed, at least in recent cases, rather than excision, the routine operation of German surgeons, which from the functional standpoint must be ultimately disappointing in its results.

It may be noted that while it should be easy to distinguish ordinary fracture of the neck of the femur from epiphyseal separation it may be impossible to differentiate the latter from epiphyseal coxa vara which is most often seen in adolescence. The essential anatomical difference is this: in epiphyseal separation directly caused by injury there is, it would appear, a sliding downward of the head including the epiphyseal cartilage, exposing a sharp angle at the inner extremity of the neck; in epiphyseal coxa vara the deformity is in the newly formed bone on the outer side of the cartilage, similar to adolescent knock knee, a deformity rather rounded than angular. Such deformity although it may not be caused by injury may be aggravated by it, even to the extent of actual fracture through the weakened bone. The principles of treatment might be essentially the same as in traumatic cases, but the prognosis would be of course less favorable and the mechanical treatment must be of longer duration. It would appear that in any form of coxa vara, the line of the epiphyseal cartilage is changed from a direction from without inward, to one above downward, thus predisposing to injury.

I do not at this time propose to discuss the subject of coxa vara in general, but it would appear that while rachitis, present or remote, is practically always the cause of bilateral coxa vara, injury as an exciting or aggravating cause of the unilateral form is far more important than is generally believed.

One may include under fracture of the neck of the femur in early life three classes of cases: (1) Simple, direct fracture of the neck, usually incomplete, occasionally complete. (2) Direct epiphyseal disjunction, usually incomplete, in rare instances, complete. (3) An indefinite class, in which the deformity is at or in close proximity to the epiphyseal junction. The patients are of a type in which the so-called static deformities of adolescence are common, and injury may be predisposing, aggravating or direct cause of the distortion.

Of classes 1 and 2, that is, of undoubted direct fracture of the neck of the femur, thirty cases have come under my observation. Five of these are classified as epiphyseal disjunctions. Three were males and two females. All were adolescents, the youngest thirteen years and the oldest sixteen. In three instances the nature of the injury was indefinite, apparently a slight fall. One patient was injured in a game of football, and one was dragged by a street car.

The twenty-five cases of facture of the neck of the femur present a decided contrast both as to age and character of the injury. Twenty were children from two to ten years of age. Five were adolescents, 11 were males and 14 females.

Nature of the Accidents.—One patient fell from a sixth story, two fell from fourth stories, one from a third story, two from second stories. Seven fell from heights of at least fourteen feet, four fell down flights of stairs. One was run over. One was knocked down by a street car. One was thrown from a carriage. One fell from a bicycle. One fell from a swing, and in three cases the history was indefinite. These patients were, almost without exception, healthy children. The accidents were severe, and the disability was immediate. In 22 of the cases the fracture was incomplete, in three it was complete.

The third class has been usually included under coxa vara, of which I have the records of 63 cases, 42 males and 21 females. Of the entire number but 12 were bilateral. Many of the cases were examined before the X-ray was available for diagnosis, but it is estimated that in about one-quarter of the cases the deformity was near the epiphyseal junction, and in many of these, it was presumably induced by injury,—epiphyseal fracture. The preponderance of males over females, and of unilateral over bilateral cases, is certainly significant as indicating the importance of injury in the etiology of coxa vara. If these indefinite cases are to be classified as primary epiphyseal fracture, it still further emphasizes the importance of injury as causing distortion of the neck of the femur.

In this connection attention may be called again to the fact that it is from this class particularly that the majority of the cases of epiphyseal fracture that have been reported has been drawn. It is in this class that the cases are so commonly mistaken for hip disease, and it is in this class that early diagnosis and protective treatment might be efficacious. It is perhaps, therefore, the one of greatest interest to orthopedic surgeons.

The object of this paper is to call attention to

two forms of fracture of the neck of the femur, of which an accurate diagnosis may have an important influence upon treatment. Simple fracture should be treated by fixation at the limit of normal abduction, an attitude which implies restoration of the depressed neck to its normal position.

Partial epiphyseal separation should be treated by direct operative reposition of the head. Excision, which is at present in such favor with German surgeons, should be an operation of necessity rather than of choice.

One should never be content with mechanical support however efficient it may be in relieving the immediate symptoms, for, recognizing the fact that normal function is dependent upon normal form, one should always aim to remedy deformity whenever it is practicable.

THE RECTAL ADMINISTRATION OF THE NEWER HYPNOTICS.

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In an unpublished paper, read before the City Hospital Alumni Association in 1899, I presented the results of a rather extensive series of cases in which the newer hypnotics had been given in suppositories.

While the value of the rectal administration of opium and its derivatives, the bromides, chloral, etc., has long been recognized and appreciated, the newer hypnotics such as sulfonal, trional, hedonal, etc., have been rarely used in this way. Yet cases not infrequently occur when great good could be accomplished if these drugs could be administered in some way other than by the stomach.

By way of illustration I might cite a recent experience of this kind: I was asked by Dr. Cabot to see a young woman upon whom a cholecystectomy for acute gangrenous infection had been performed by Dr. Lilienthal, and who was in a desperate state on the third day after the operation. The patient was an intensely nervous woman, whose incessant vomiting threatened not alone the success of the operation from the continual tugging at the sutures, but her life from the exhaustion. She had an idiosyncrasy against morphine, bromides per rectum had been tried in vain, chloral could not be given and the condition of the stomach prevented the administration of any drugs. I advised the rectal use of twenty grains of veronal dissolved in some sherry and water; within an hour this quieted the patient and half an hour later she fell into a sleep, lasting ten hours, from which she awoke in a condition permitting her to take nourishment by stomach. The subsequent course of events was an absolutely uneventful and rapid convalescence.

While this case was an extreme one of its kind, yet cases often occur in which, for reasons which need scarcely be discussed in detail, the stomach or skin may not be the best available route for the administration of hypnotics.

It may seem strange that insoluble preparations like sulfonal, trional and other hypnotics should be absorbed by the rectum; but clinical experience proves that this is the case and that the speed of the absorption is about the same as that which takes place in the stomach, even when they are administered in cocoa-butter suppositories. To quote from my former paper: "All are not equally active, since I found that hedonal, chloralose and chloretone were so slightly soluble as to be practically worthless in this connection; on the other hand, sulfonal acted much more powerfully than trional. Heroin, chloralamide and phenacetin were also readily absorbed. The use of combinations of sulfonal, or trional, sulfonal and phenacetin gave excellent results."

The suppositories in all these trials were of the ordinary size (fifteen grains of cocoa-butter). No irritation of the rectum was ever observed.

I might add that most of these observations were conducted in the wards of the Mt. Sinai Hospital, and the fact that even in the unsuitable environment of a hospital ward the hypnotic effect could be obtained in a fair number of cases established the value and possibilities of this method of administration. My subsequent experience with the rectal administration of these hypnotics has confirmed these observations, and now that the list of hypnotics has been enriched by the addition of veronal, which is distinguished from the others of this group by its free solubility, the value of this method of administration deserves to be more clearly recognized than it has been.

For rectal use veronal need not be administered in suppository form, but in solution either in warm milk, or preferably, in diluted sherry, to which a little salt or sugar has been added to increase the speed of absorption. The dose of veronal for this purpose is somewhat larger than when administered by mouth, the average dose for an adult being fifteen to twenty grains.

THE MEDICAL TREATMENT OF APPENDICITIS.[1]

BY A. J. HALL, M.D.,
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It is so generally admitted that appendicitis is a surgical disease that it is more than likely my suggestion that its treatment has a therapeutic aspect will meet a prompt negative. However, so many cases recover without surgical interference that it seems to me therapeutics have not received the credit to which they are clearly entitled.

A review of six papers advocating medical treatment,[1-6] which have come to hand during the last year, has failed to reveal anything satisfactory in the way of statistics, the number of cases not being given and the mortality being roughly estimated at something between five per cent. and ten per cent., but the writers express themselves as entirely satisfied with their results. In these papers I failed to discover a method or

1 Read at the Annual Meeting of the American Therapeutic Society, New York, June 2, 1904.

treatment that was generally applicable; some writers making no mention of local applications; some using them hot and others using them cold; some used opium and anodynes and others advised against their use or made no mention of them; some fed by mouth, others by enema only;[8] some used cathartics, and others did not. No mention is made of medication with a view of directly influencing the diseased process, "general principles" and the "expectant plan" being phrases used where, in my opinion, the details which carry a case to a successful issue should be minutely explained. The writers usually admitted that under certain circumstances they would advise operative interference.

The appearance of these papers shows that there is a strong sentiment in favor of medical treatment, as of course only a small percentage of its advocates are enthusiastic enough to express their sentiments in print. In the matter of statistics, I am as much at fault as the writers referred to, as I have kept no case records and have no figures to offer; still, the impression made upon my mind by a number of cases in which there has been no surgical interference and no death, is, that appendicitis may be treated medically with a fair prospect of as good results as those obtained by the surgeon, the proportion of recoveries being so large that the physician can safely count upon successfuly carrying his patient through the first and second acute attacks, and that the proposition to operate should be considered in the interval between the second and prospective third attacks.

Without touching upon the very interesting subjects of etiology, pathology, symptomatology and diagnosis, any one of which affords ample material for a lengthy paper and interesting discussion, I will show the actual condition the physician is called upon to treat by quoting a few figures from a paper by a surgeon. Dr. Winslow[7] operated upon three cases on the second day and found two of them to be pus cases and one clean. Of 14 cases operated upon during the first seven days, ten were pus cases and four were clean. Between the eighth and thirteenth days, three cases were operated upon without finding pus. On the fourteenth and twenty-first days, five cases were operated, pus being found in four. Of these cases, 39.5 per cent. were clean and 60.75 purulent. Of the 12 cases operated during the first five days 75 per cent. were purulent. Supposing that these figures will hold good in the average run of appendicitis cases, then it may be said that the class of cases which have been treated medically with satisfactory results includes every variety, from the endo-appendicitis, or mild catarrhal form, to the para-appendicitis, or severest form, in which the inflammatory process has involved all the tissues of the appendix and extended to surrounding structures with the formation of abscess. This statement is borne out by the experience of Dr. Lewis,[8] who reports eight cases, each of which developed abscess, the abscesses discharging through the bowel, and all recovering under medical treatment.

Having diagnosed acute appendicitis, my method of medical treatment is as follows: The patient must be placed at rest in bed, and this rest made as absolute as possible, an essential element in this regard being the installation of a nurse who can have a good influence over the patient, relieving him, if possible, of all care and certainly of all muscular effort on his own behalf. The abdominal muscles may be relaxed by flexing the thighs and supporting the knees by pillows. The vomiting and peristalsis of the bowel may be reduced to the minimum by withholding all food for the first twelve or twenty-four hours and the omission of anything in the form of cathartics or purgatives. A copious enema of soapy water or sweet oil should be used every four hours and a hot flax-seed meal poultice must be maintained over the whole of the abdomen, replacing it every two or three hours, night and day, until the temperature is normal. This application reduces the pain to such an extent that the use of anodynes internally or hypodermically can be avoided, especially if we convince the patient that the pain will probably subside in a day, and that medication might obscure symptoms that would be of vital interest during the next few hours. The amount of relief afforded by the poultices in the matter of nausea, vomiting, pain and fever is the index of the success or failure of the treatment.

In acute appendicitis fever is always present and the pulse rate increased; and the most important guides of the progress of the case are the temperature and pulse rate, a steadily increasing pulse rate being a sign of ill omen, while a diminishing rate gives assurance of a good prognosis.[9] The only counter indication for the use of enema, or at least one calling for great care in its use, is the involvement of the lower bowel or rectum in the inflammatory process, which occurs when the appendix is deeply seated in the pelvis, and doubt upon this point should be cleared up by a digital examination of the rectum. The rest and quiet of the bowel can be further promoted by the avoidance of repeated palpations, or even percussions, in an effort to demonstrate a swollen appendix or its surrounding abscess wall, the existence of which may be taken for granted, and the size need have no bearing on the case.

When the vomiting subsides the patient may be fed liberally by the mouth with milk, water and soups. The larger the amount of liquids consumed the better, as they not only nourish the patient, but by means of the diuresis produced render material aid in the elimination of toxic materials. Creosote, minim one, in two drams of lime water, may be administered every two or three hours, and arsenite of copper, grain $^1/_{100}$ every three hours. The creosote is eliminated, in part at least, by the kidneys, and must therefore, while in solution in the blood, be brought into most intimate contact with the inflamed area, and does, I believe, exert a salutory effect upon the inflammatory process and the toxic elements generated thereby. The arsenite of copper I employ as an intestinal antiseptic, and I am convinced that it

prevents or diminishes tympanitis and the tendency to vomiting, and has a marked anodyne effect. If the vomiting does not subside, and should it become stercoraceous, occlusion or paralysis of the bowel is indicated, and operation is the only hope of relief.

Between the twelfth hour and the end of the second day symptoms will usually begin to mitigate, the pain, temperature, and pulse rate all gradually subsiding, the patient passing on to uninterrupted convalescence, the case terminating in complete recovery in from seven days to three weeks. On the other hand, if the pain should suddenly disappear, the temperature drop to normal or below, the tumor diminish in size, the abdomen become tympanitic, the pulse rate remain high or increase in frequency, and symptoms of shock develop, it may be inferred that the abscess has ruptured; and if it has not discharged into the bowel the symptoms may be expected to recur with increased severity in a few hours, and another stage, acute diffuse septic peritonitis, is reached, where operation is indicated, though under very unfavorable circumstances. The condition is so hopeless in fact that some surgeons have refused to operate, partly because it may be attended by one or more secondary abscesses, yet, even this condition has been successfully tided over by reinaugurating the treatment at first outlined, using stimulants liberally and large amounts of normal salt solution hypodermically.

To recapitulate: An efficient medical treatment of acute appendicitis is as follows: Rest in bed, hot poultices to the abdomen, a liquid diet, chiefly composed of milk, four to six enemas a day, internally the arsenite of copper and creosote. Purgatives and opiates are not to be used.

Conclusions—The tendency of appendicitis is toward recovery. All acute cases should be treated medicinally until, after mature deliberation, it is shown that operation offers a better prospect for recovery. In recurrent cases operation should be advised during the interval after recovery from the second attack.

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The Non-transmission of Acquired Immunity to Poisons.—In an experimental investigation of the phenomena of immunity to abrin poisoning, to which it is possible to adapt fowl by means of intraperitoneal injections of this poisonous proteid obtained from the seeds of wild licorice, A. LUSTIG (*Arch. Ital. de Biol.*, May 31, 1904), found that this immunity acquired by either parent can not be transmitted to the offspring. He concludes therefore, that there is no such thing as the hereditary transmission of immunity, and that the result obtained by Ehrlich can be interpreted only in that immunizing substances may pass from mother to fetus by way of the placenta.

THE CORRECTION OF ABNORMAL CONDITIONS OF THE BLOOD RELATIVE TO SURGICAL OPERATIONS[1]

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FREQUENTLY the surgeon is called upon to operate on patients who, when they first present themselves, are in no condition to stand an operation on account of deficient quantity of blood or the poorness of its quality. On the other hand, it is desirable that the patient regain his normal condition as soon as possible after operation, whether the abnormal condition of blood is due to the operation or not.

The ideal remedy is that which will restore the normal condition of the blood in the shortest time with the least disturbance to the rest of the body, the digestive system particularly. Less necessary are palatability and cost of the remedy. To determine which of several preparations best fulfilled the above conditions was the purpose of this investigation.

All of the preparations used being recognized as good, Dr. A. J. Ochsner gave me permission to prescribe them as I saw fit to certain of his patients in Augustana Hospital. Only those cases were selected whose appearance indicated the need of a hematinic. As often as possible similar cases were paired off, one patient being given one preparation and the other patient another, and the results compared. The cases were paired according to pathological condition, age, sex, general condition and the condition of the blood as to hemoglobin and erythrocytes at the beginning of treatment. The preparations used were malt with iron and manganese; malt with iron, quinine and strychnine; Blaud's pills and the preparation known as pepto-mangan-Gude.

After watching the effect of the medication on the patients, and observing the records, it is seen that Blaud's pills acted quickly, but constipated; the malt combinations caused nausea in a few patients, and the malt, manganese and iron combination constipation in nearly all. The pepto-mangan, given in milk, was agreeable to take, and in no case did it cause nausea or constipation. While in two cases the Blaud's pills acted more quickly than pepto-mangan in two similar cases, on the whole the latter gave better and quicker results than any of the others, and at the same time caused no digestive disturbances in any of the cases.

Although the investigation was undertaken for the purpose of finding the best hematinic for surgical cases, it was tried in one case of chlorosis and in several obscure medical cases.

The following table shows the results obtained in all those cases where Gude's preparation was given. One to four drams were given in milk to each case, three times a day. The hemoglobin

1 Received for publication June 2, 1904.

was estimated with Von Fleischel's hemometer and the erythrocyte count made with the Thoma-Zeiss apparatus. The first blood count was made previous to operation in all surgical cases, and the last a short time before the patient's discharge from the hospital. The second count was never made immediately after the operation because of the temporary derangement due to the anesthetic and the loss of blood:

Name.	Age.	Diagnosis.	Date.	Erythrocytes per 1 c.c.	Per cent. of Hemoglobin.
1.— G. N.[1]	53	Carcinoma of stomach.	9 /29 /03	2,920,000	33
			10 /12 /03	3,400,000	43
			10 /25 /03	3 260,000	42
			11 / 8 /04	2,520,000	36
2.— Mr. L.[1]	40	Carcinoma of stomach.	10 /29 /03	2,665,000	27
			11 /23 /03	2,900,000	28
			12 / 5 /03	2,540,000	27
			12 /19 /03	2,300,000	26
3.— Miss J.	17	Acute menorrhagia.	12 / 4 /03	2,310,000	36
			12 /20 /03	3,565,000	44
			12 /27 /03	4,160,000	49
4.— Mrs. E. K.	33	Menorrhagia.	12 / 7 /03	4,340,000	44
			1 /10 /04	3,565,000	64
			1 /18 /04	5,100,000	82
5.— Mr. S.	23	Neurasthenia(?)	12 /16 /03	4,060,000	60
			1 / 7 /04	4,260,000	65
			1 /14 /04	4,560,000	75
6.— Mr. K.	35	Tuberculosis of mesenteric glands.	11 /15 /03	3,825,000	62
			12 /10 /03	4,826,000	68
			1 / 4 /03	4,716,000	66
7.— Mrs. F.	23	Pelvic abscess	10 /25 /03	4,060,000	60
			11 /23 /03	5,100,000	69
			12 /11 /03	4,075,000	78
8.— Mrs. A.	34	Pelvic abscess	12 /10 /03	3,195,000	53
			12 /29 /03	4,203,000	58
			1 /11 /04	4,560,000	78
9.— Miss A. J.	16	Chlorosis.	10 /25 /03	3,010,000	45
			11 /12 /03	4,050,000	65
			11 /28 /03	5,676,000	80
10.— Mrs. H.	40	Myoma of uterus	7 /15 /03	2,100,000	42
			8 /17 /03	3,900,000	55
			9 /15 /03	4,500,000	80
11.— Johnny L.	13	Tuberculosis of hip	12 / 1 /03	2,680,000	45
			12 /29 /03	3,600,000	55
			1 /20 /03	4,100,000	62
12.— Mr. E. P.	21	Tuberculosis of ankle.	10 /29 /03	4,310,000	66
			11 /10 /03	4,850,000	71
			1 /23 /04	5,166,000	75
13.— Johnny F.	9	Extensive burn and infection of surface.	11 / 9 /03	3,560,000	50
			11 /25 /03	3,900,000	56
			1 /23 /04	4,362,000	68
14.— Miss E. B.	17	Perforative appendicitis.	11 /25 /03	3,600,000	55
			12 /26 /03	4,000,000	65
			1 /22 /04	4,250,000	60
15.— N. N.	20	Suppurative appendicitis.	12 /20 /03	4,200,000	60
			1 / 2 /04	4,400 000	66
			1 /20 /04	5,120,000	75
16. — Mr. B.	28	Chronic appendicitis.	1 / 2 /04	3,565,000	62
			1 /10 /04	4,320,000	70
			1 /23 /04	4,800,000	78
17.— Mr. S.	37	Gangrenous appendicitis.	10 /10 /03	3,300,000	45
			10 /27 /03	3,350,000	45
			11 /27 /03	3,010,000	40
18.— Miss W. J.	20	Empyema.	11 /20 /03	2,740,000	44
			12 /20 /03	3,070,000	52
			1 /22 /03	3,820,000	60
19.— Mr. F.	44	Cholelithiasis	11 /23 /03	3,560,000	57
		Chronic appendicitis.	12 / 4 /03	4,100,000	68
			1 /12 /04	4,640,000	78

In the nineteen cases tabulated there is an average increase of 800,000 erythrocytes and of 14.5 per cent. hemoglobin. This improvement was during forty days on an average. The usual time a patient stays in the hospital is twenty-one days when the case is of ordinary severity from a surgical standpoint. Such cases were placed on tonic treatment and showed rapid improvement, but of such cases only one (Case 16) is noted because it might be urged they would improve equally fast with or without a tonic.

It is seen from the above table that even in the cachexia of carcinoma there is a temporary improvement, which shows that in the use of this tonic we are dealing with a powerful hematinic. In Case 17 there was no improvement, the patient dying shortly after the last count. At the autopsy I found a pyogenic abscess in the liver as large as an orange and about 200 c.c. of pus below the right kidney, which explained the retrogression. In all of the other operated cases the improvement was steady and marked, especially in uterine diseases accompanied by loss of blood. In the case of chlorosis (Number 9) the improvement was remarkable, the patient being discharged cured in a little over a month, at which time all the symptoms had disappeared.

[1] Incurable.

ADDISON'S DISEASE, WITH AND WITHOUT ADRENAL TUBERCULOSIS.[1]

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I AM well aware of the strong protest which the above title would have called forth from certain prominent medical writers of two decades ago, and which may still be made by some writers of our own time who, like their predecessors, hold to the so-called "unity" of this disease. This belief rejects from the category of Addison's disease all cases in which the pathological lesion is aught else but a tuberculosis of the adrenal glands. For example, Greenhow,[1] in his admirable Croonian lectures of 1895, in which he studies 330 cases thus diagnosticated, accepts only 103 as perfectly typical, because in only that number were there found tuberculosis of the adrenals without any organic disease of any sort outside of these glands. To these he adds, with reservation, 80 more, 16 as being probably incompletely reported in certain details, and 664 others which, while showing the full clinical picture of Addison's disease, did have lesions outside of the tuberculosis of the adrenals, which lesions gave rise, in his opinion, in many cases to symptoms of their own, and in a few instances modified or obscured some of the usual symptoms of Addison's disease. Two of the groups which Greenhow rejected were thrown out because of the lack of complete conformity to the Addison complex, in that in one case there was no disease of the adrenals, and in the other group a disease non-tuberculous was found. Certainly the rejection of cases of Addison's complex arising from cancer of the adrenals, because the disease was not tuberculous, is hardly to be taken as proof that Addison's disease can never arise except from adrenal tuberculosis.

Wilks was also an adherent of this view of the unity of Addison's disease, though it is to be remembered that Addison[2] himself was of the opinion that not only one fibrocaseous lesion but others, such as cancer, might produce the symptoms.

[1] Read at the Association of American Physicians, Washington D. C., May 11, 1904.

Dr. Dyce Duckworth[3] expresses his general adherence to what he calls the doctrine of the Guy's Hospital school, that the lesion of this disease is a specific and tuberculous one, and says: "It appears probable that continued research into the nature of the specific deposit and changes met with in Addison's disease of the adrenals will render it certain that these changes are always of a tuberculous nature." Yet, despite this dogmatic statement, he admits some of the difficulties in the way of the simple unity of the disease, and more than hints that a broader pathogenesis may have to be sought for it.

Now, the term Addison's disease is to be considered to indicate a clinical syndrome, consisting of bronzed skin, constitutional disturbance, gastro-intestinal irritation, and usually progressive weakness. The bronzing is the most conspicuous feature, but not the solely essential one. It has been said to be an indirect rather than a direct adrenal symptom. It may even be absent, though, if so, the disease can hardly be diagnosticated ante mortem. It has been said that the bronzing bears somewhat the same relation to the rest of the disease that the eruption of scarlet fever does to the other manifestations of that disease. Both the bronzing and the rash may be absent, though very exceptionally. But the eruption alone is not scarlet fever, nor is the bronzing Addison's disease. Each, plus its own allied symptom-group, warrants the respective diagnosis.

With this very proper precaution as to diagnosis, Addison's complex is certainly observed in more than one sort of pathological process. Admittedly the great majority of cases are found in tuberculosis of the adrenals.

But Lewin's[4] well-known figures are to be borne in mind. Among 281 cases he found: typical cases of Addison's disease with sound adrenals, 20 per cent.; typical cases of Addison's disease with diseased adrenals, 80 per cent.; disease of adrenals without bronzing, 28 per cent.; disease of adrenals with bronzing, 72 per cent.

Let us, then, in the present study adopt the following classification:

I. Cases with skin bronzing: (*a*) Adrenal tuberculosis, the commonest type of Addison's disease; (*b*) Adrenal disease, non-tuberculous: Atrophy, chronic interstitial inflammation, cancer, occlusion of adrenal vein, hemorrhages; (*c*) No adrenal disease: (1) With disease of the semilunar ganglion; (2) without disease of the semilunar ganglion; (3) pigmentation, usually without other symptoms of Addison's disease.

II. Cases without skin bronzing: (*a*) Adrenal tuberculosis: (1) With tuberculosis elsewhere: (2) without tuberculosis elsewhere; (*b*) Adrenal disease, non-tuberculous: (1) Cancer; (2) tumors; (3) necrosis, etc.

The cases of Addison's disease which I have to report, and which are limited to such as have post-mortem evidence to sustain them, fall under the first two of the above categories. Three of them correspond to the commonest type, showing well-marked adrenal tuberculosis, with small amount of tuberculosis elsewhere in the body. The fourth case is of greater interest, as being clearly one in which there was absolutely no tuberculosis of the adrenals, but a simple and extreme atrophy.

Case I.—Mr. H. S., aged forty years, seen in November, 1897, with Dr. Clement, of Roxbury, to whose courtesy I am indebted for the history. Patient had always enjoyed good health. Several years ago had a severe injury to the foot, followed by inflammation and suppuration through the sole. Always had a dark complexion, but for a year past had been growing darker, as observed by his friends. Dr. Clement was called to see him the last of February, 1897, at which time he complained of great weakness, loss of appetite, nausea, and vomiting. About a year before this he began to lose flesh and strength; at times was faint and nauseated, particularly on moving or rising. During the summer he was quite miserable, but went away and improved, gaining ten pounds in weight. After returning in the autumn he said he "felt quite well." Four weeks after that he began to fail rapidly, though he continued to work up to three weeks of his death. Never had a cough. Skin pigmentation began about this time. The skin was a quite uniform mahogany color over most of the body, and there were dark patches on the mucous membrane of the mouth. The skin was that of a dark mulatto, the hands and face being the darkest part. No mottling of the skin, but a uniformly deep mahogany color. His emaciation was not extreme. He lived about a week after first calling medical aid; the nausea and vomiting continuing until exhaustion caused his death. His mind was clear to the last, long after his pulse at the wrist had ceased. At autopsy both pleural cavities were obliterated by adhesions with a few small, hardened, tuberculous areas at the apex of lung. There were no other evidences of tuberculous disease than in the lung apices and the adrenal glands. These were removed with the kidneys, and Dr. W. T. Councilman kindly examined them, and reported as follows: "Two kidneys and a portion of apex of lung brought for examination. At the apex of the lung there are circumscribed, dark-pigmented radiating cicatricial areas, and about these various small, miliary, caseous foci. Both kidneys and adrenals present. The right adrenal is firmly adherent to liver. The gland enlarged; on section showed a central area of caseation with partial puriform softening, and around this dense cicatricial tissue in which miliary foci can be seen. The fat is apparently hyperemic and extends into the tissue. None of the adrenal tissue, as such, can be made out. In the kidney immediately bordering this the cortex is white, swollen, somewhat softened, and in the cortex at one point there is an obvious extension of the process. At this place no separation can be seen between the adrenal tissue and that of the kidney. Elsewhere there is no lesion in the kidney. The left adrenal gland easily separated from the kidney. It is reduced to the size of a filbert, and in this there are caseous areas and cicatricial masses. There is no

evidence in either adrenal of any remains of the glandular structure."

Case II.—A. A., male, single, aged thirty-five years, Syrian, pedler, entered Boston City Hospital February 20, 1903. History of some illness two years ago, with cough, vomiting, and fever. Says he made complete recovery. Worked until three weeks ago, then chilly, slight cough, headache, backache (which last he ascribed to carrying heavy bundles). Patient is undersized, not well developed. Temperature, 102° F.; pulse, 104; respirations, 28. Skin throughout the body is very swarthy, evenly. This color was supposed to be a racial peculiarity. The patient spoke little English and no friend visited him. Nothing could be learned as to any recent increase of pigmentation. Pupils were equal and reacted well. No hemiplegia; tongue protruded straight. Respiration over both apices in front is harsh, without râles. Over both bases behind equally subdued, without râles. The examination was otherwise negative, save for a markedly scaphoid abdomen. Kernig's sign present; no Babinski. Patellar reflexes equal and present. Attempted extension of left leg causes pain in lower lumbar region. Leucocytes, 16,400. The following day there was only slight patellar reflex; some rigidity of lumbar muscles.

February 23 there was great restlessness, with some vomiting. Lumbar puncture was done, and 50 c.c of slightly flocculent fluid withdrawn, some tension within the canal being shown. This fluid proved to be sterile.

The patient became drowsy; there was considerable retraction of the head with flexion of the lower extremities, and he died on February 24, two days after admission.

The autopsy showed adherence of right pleura at base and both apices. Few small, old tubercles at both apices. No tubercles were found in brain or meninges. There was chronic fibrous thickening around the veins of the sulci. Vessels of the base were normal. The lateral ventricles and the fourth ventricle contained an increased amount of clear, straw-colored fluid. The pia, especially over the cortex, contained many scattered pigment spots, which were thought to be due to diffused modified hemoglobin. There was no evidence of intracellular pigment beyond a moderate number of the pigment and detritus-containing phagocytes so frequent in this region. A small ischiorectal abscess was present.

The left adrenal was a large, tuberculous mass, 5 cm. by 2 cm., varying from calcareous to puriform in constitution. Right, similar but not so large; size, 2 cm. by 3 cm. The diagnosis of Addison's disease was not made in this case during life, but the constitutional symptoms and swarthy color of the skin, taken in connection with the findings of the autopsy, warrant the diagnosis.

The absence of demonstrable tubercles in the meninges was, in view of the clinical symptoms and of the hydrocephalus, a surprise. The presence of considerable pigmentation on the pia is interesting in view of the statement of Duckworth, that it is doubtful if pigment is ever found deposited in any internal organs in Addison's disease, though he quotes one observation by Carrington of pigment in the pia mater.

Case III.—Autopsy by Dr. F. B. Mallory, who kindly gives me notes of the case. Patient, a woman, aged thirty-three years, well built, fairly well nourished. The clinical symptoms had consisted of progressive weakness; the duration about a year. The attention of the physician had apparently not been attracted to the adrenals. Hair rather light in color; skin dark in color, like that of a brunette. Areola of nipples dark. Conjunctivas slightly pigmented. Bronzing general. Gall-bladder and ducts normal. Bile flowed easily into duodenum. Pancreas, stomach, and intestines apparently normal. Adrenals each contain a caseous mass less than 1 cm. in diameter. Besides this, small areas of caseation and calcification. Thin, small masses of fibrous tissue. Both glands much diminished in size. No trace of adrenal tissue. Small, flattened, caseous nodules in semilunar ganglion. Several adjoining glands enlarged.

Anatomical Diagnosis.—Chronic tuberculosis of adrenal glands, semilunar ganglion, and of adjoining lymph nodes.

Case IV.—Adrenal atrophy with Addison's disease. I. E. P., female, aged thirty-five years, born in Germany; housework. Had measles, smallpox, chicken-pox, and scarlet fever when young. Rheumatism at eighteen years. Has been well since. Patient states that pigmentation of skin has come in past year. Since last summer has been run down. Complains of pain in feet and ankles, extending up to knees. Feet have been swollen at times. At times has had dull pain in her hands. Gets out of breath easily. Gets up once at night to pass water. Eyesight not very good, especially in right eye. No cough. Appetite fair. Digestion is good. Bowels constipated. Chief complaint is weakness.

Physical Examination.—Well developed; cachexia; pale. Face covered with irregular pigmented areas, varying in size from 1 mm. to 5 cm. in diameter, occupying old smallpox scars.

Abdomen.—Not distended. Considerable voluntary spasm, so that palpation is difficult. No masses felt. Separation of recti.

Skin.—Irregular pigmented areas scattered over entire cutaneous surfaces. Pigmentation most marked in axillas, groins, abdomen, and back.

March 2.—Liver edge just felt in full respiration. Movable kidney on right felt with great distinctness. Chest and heart negative. Marked diffuse brownish pigmentation back of neck, axilla-scapular regions. In lumbar region it is more markedly macular. Marked pigmentation at folds of knee-joints. Face is now marked with pigment in each cicatrix, which patient says was not present one year ago. Tuberculin test negative, but not to be considered, owing to unreliability of tuberculin used.

March 5.—Since admission has shown marked

general weakness. Complains of general pains in shoulders and extremities. Nauseated and vomited on several occasions. Yesterday afternoon up in a chair for short time. No apparent change in condition noticed afterward. About 11 P.M. patient found in a state of collapse. Heart action slow and weak. Pulse (radial) barely felt. Extremities cold. Marked pallor; very much excited. Emotional, groaning and crying out persistently. Cries due to fright from weakness—not from pain. Failed to respond to stimulation, and died at 4:05 A.M.

Autopsy, thirty-two hours post mortem, by Drs. F. B. Mallory and R. L. Thompson. Body length 152 cm. Body of a slender, gracefully-built woman. Lividity of dependent parts. Pupils 6 mm., equal. Rigor mortis present. No edema. Over the face and neck are closely set brown macules, mostly discrete, 0.5 cm. to 1.5 cm. in diameter. There is a slight brownish tint to the skin over the abdomen and about the axillæ.

Peritoneal Cavity.—Very little omentum or retroperitoneal fat. Serosa pale in color, normal in appearance. Right kidney lies directly under gall-bladder, and is freely movable. Mesenteric lymph nodes slightly enlarged, grayish-red in color. Appendix 6 cm. long; retrocecal; has a mesentary to tip. Diaphragm extends to fourth space on left, fourth rib on right.

Pleural Cavity.—There are a few fibrinous adhesions about the right apex. Remainder of cavity normal.

Lungs.—Voluminous; show the usual carbon tracery. Posterior portions somewhat congested. At the right apex pleura is thickened, and there is an old fibrous nodule, 3 cm. in diameter, the center of which is filled with cheesy material surrounded by thick fibrous wall. The remainder of the lungs is dark red. On section considerable blood-stained fluid exudes on pressure. Bronchi contains sticky, mucoid material.

Kidneys.—Weight, 230 grams. Cortex, 6 mm. Capsule strips readily, leaving smooth surface marked with stellate veins. On section kidney is pinkish-red in color. Cortex and pyramids show normal differentiation. Glomeruli seen as fine, glistening dots. Fresh section shows large amount of fat in small and medium-sized droplets in basement membrane of tubules.

Adrenals.—Very small in size, both together weighing less than 5 grams. Medulla practically not to be made out. Right with considerable connective tissue weighs 2 grams; left, 2.25 grams.

Microscopical Examinations of Adrenals.—The lesions consist in atrophy of the gland with destruction of the adrenal cells, marked fibrous change, and areas of lymphoid and plasma-cell infiltration. A greater part of the atrophied gland, both cortex and medulla, is replaced by fibrous tissue. Other portions show narrow areas, in which the remnants of gland tissue, detached from the basement membrane, and in various degrees of degeneration. These detached cells lie in connective-tissue stroma, which is infiltrated with lymphoid and plasma cells. The lymphoid and plasma cells sometimes form definite focal areas in which may appear an occasional adrenal cell. Bloodvessels are injected, walls not thickened. No evidence of tuberculosis could be found in either adrenal.

ADRENAL ATROPHY.

The case last reported belongs to a category, not large, of simple atrophy of the adrenals. As such cases are likely to be challenged by a believer in the "unity" of the diseases I append a brief report of a few other cases.

Barlow[5] reports a case of a woman, aged forty-two years, in whom both the adrenals together weighed less than 0.5 drachm. There was also gumma of the left kidney. There was brown pigmentation, most marked on the neck, behind and in both axillas, around the nipples, flanks, and groins, also in the mucous membrane of the mouth. The inner side of the knees and the dorsum of each foot showed an irregular mottling of darker pigmentation. The abdomen showed a dark line from pubes to ensiform. She had had a recent pregnancy, terminated by delivery of a stillborn child, but the pigmentation had antedated the pregnancy and developed rapidly since its close. There was fever (99° to 102° F.), vomiting, and death.

F. Roloff[6] reports a case in which there was characteristic Addison's disease in a man, aged twenty-two years, in whom this pigmentation had begun thirteen years before, but who had felt practically well till five days before his death. The post mortem revealed only an extreme atrophy of both adrenals without the slightest tuberculosis. There was also no lesion of the similunar ganglion.

Philips[7] reports a very similar case, where pigmentation had begun fourteen years before death, but for seven years had been unaccompanied by any symptoms. The adrenals were atrophied, not tuberculous.

Both these writers have apparently independently made a collection of all similar cases from the literature, which together amount to fourteen. In all of these tuberculosis was absent from the adrenals and in only three was there tuberculosis of any part of the body; in two cases no adrenals were found. To these 14 cases of adrenal atrophy with Addison's disease the one above reported adds a fifteenth.

Rolleston[8] calls attention to the fact that the adrenals may diminish in size in old age, but in his 1,050 post mortems found them small in only six patients under forty-five years of age. These showed no signs of Addison's disease. But he adds that he has never seen the extreme atrophy described in some cases of Addison's disease in which the organs were reduced to the size of peas.

CANCER OF ADRENALS.

In his original paper Addison included three cases of secondary carcinoma of the adrenals, and one in which a secondary carcinomatous nodule

blocked the adrenal vein and caused hemorrhage into the capsules. These he later wished to remove from the category, and ascribed their share in the production of the symptoms to the proximity of the lesions to the sympathetic.

Greenhow rejects nine cases of Addison's disease with adrenal cancer; six as not being Addison's disease and three as (while undoubtedly Addison's disease) *not* cancer, but tuberculosis of the adrenals. One of these reported by Gage, of Worcester, occurred in a woman whose breast he had removed for scirrhus two years before without recurrence. There were pigmentation and constitutional symptoms for six months. The adrenals were joined together by a thickened mass of enlarged and diseased lymphatic glands. This case is rejected on account of the lack of microscopical examination, but as many of the cases were before the days of the microscope and this test was not insisted on when the disease appeared to be tuberculous, the justice of this ground of exclusion does not appear.

Other writers like Rolleston do admit cancer as a possible cause of Addison's disease, though it is apparently rare and both glands may be destroyed by cancer without the production of symptoms. But the same is true of tuberculosis.

Hemorrhages into the substance of the adrenals have been noted as connected with Addison's disease, not only in the case reported by Addison himself and above referred to, but also by Virchow as seen in some rapidly progressing cases of Addison's disease.

ADDISON'S DISEASE, INCLUDING BRONZING AND CONSTITUTIONAL SYMPTOMS, WITHOUT DISEASE OF THE ADRENALS.

Lewin in his classic monographs finds, among a total of 281 cases, 68 patients with the symptom-complex, but without lesion of the adrenals, being something like 20 per cent. of the cases. Shall these be rejected because they do not conform pathologically to the more common type? Lewin sees no reason to reject them on this ground, although other authors are inclined to do so in similar cases.

Let us for a moment consider, as fairly illustrative of this class, the case of Merkel.[9] A man aged forty-six years, ill-nourished, shows weakness, decrepitude, anorexia, and a strikingly bronzed skin, including both the covered and uncovered parts of the body. Although he has always been dark, the pigmentation has greatly increased of late. He has dark spots on the buccal mucous membrane. Fever, vomiting, abdominal distress, diarrhea, increasing weakness, delirium, death. The ante-mortem diagnosis was Addison's disease, of which the buccal pigmentation (pointed out by Niemeyer as pathognomonic) seemed to the author the final and conclusive symptom. Post-mortem there was moderate internal hydrocephalus, with granular ependyma, miliary tuberculosis of the peritoneum and of an enlarged spleen, perisplenitis, perihepatitis, scant miliary tuberculosis of the liver, and fatty degeneration. Normal adrenals. Some enlarged retroperitoneal glands, but no caseous focus. The skin pigment was like that in Addison's disease, granular and distributed in the deep cells of the rete Malpighii. Yet Merkel, on the strength of the autopsy, eliminates this case from the category of Addison's disease, saying merely that the case destroyed for him the pathognomonic significance of pigmentation of the mucous membranes in connection with the rest of the Addison complex.

Another case instructive in this connection is that of Richon.[10] A girl of ten years, whose father died of phthisis and whose three brothers and sisters had died young, had complained for two months of weakness and anorexia, was depressed and always sitting or lying down. There was a darkening of the skin on the face, brow, commissure of the lips, trunk, back, glands, and buttocks. The backs of the hands were especially dark, chocolate colored; some darkening of the buccal mucous membrane. Consolidation of both apices. The injection of adrenal gland caused restlessness and vomiting, and was discontinued. She began to improve after three weeks and left the hospital much better. Returning after an absence of three and a half months, the pigment had gone from the face and was less on the rest of the body. In the middle of a month's stay in the hospital the pigmentation began to return. She again left the hospital, was taken with abdominal pain, vomiting, and cough. She was in bed for three months with vomiting and diarrhea. At the end of that time she entered the hospital again with no vomiting, but with increase in pigmentation and prostration, which in two months proved fatal.

The post mortem showed no lesion of either adrenal, either tuberculous or otherwise. There was tuberculosis at the apex of each lung. In the lower 40 cm. of the ileum there were ulcers with perforation. The semilunar ganglion and the ganglia of the solar plexus and the sympathetic nerves were all normal. They were surrounded but not pressed upon by voluminous lymphatic glands. Richon also quotes a case of Brault and Perruchet like his own case, except that theirs, while showing no lesion of the adrenals, did have a small tuberculous mass adherent to and penetrating the semilunar ganglion.

1. An important case is that of Jurgens,[11] which was that of the full Addison complex in a patient with a big aneurism of the aorta, which caused compression of both splanchnics and so atrophy and loss of function of both the corresponding adrenals. On the strength of this and another case, the author claims that in every case of true Addison's disease there is a gray degeneration of the nerve fibers of the splanchnics. This may be either protopathic, when one finds simple atrophy of the adrenals without other inflammatory appearances in these or other organs, or (more commonly) deuteropathic, in consequence of primary disease of the adrenals or pancreas.

2. These changes of the sympathetic system of the spinal ganglia and even of the cord have been recorded by many observers, but, on the other hand, have been definitely excluded in a sufficient number of cases to show that they are not essential to the production of the symptoms in question. Neusser says that minor degrees of such degeneration are found in various cachexias like pulmonary tuberculosis, and hence are of no significance. Most writers agree with Mann[12] that the structural changes which are usually present in the adrenals may or may not be followed by secondary changes in the semilunar ganglion.

3. Let us not forget, as Jaccoud has said, that bronzing without progressive asthenia and without visceral disturbances is not Addison's disease. Thus we shall not be misled into accepting the large number of cases which are on record as "simulating" Addison's disease, chiefly by reason of extensive skin bronzing. Certain affections of the female genital apparatus produce such bronzing, varying in extent from the pigmentation of pregnancy through the common chloasma uterinum to the pigmentations connected with marked ovarian disease, like that reported by Neusser,[13] where there was marked cystic degeneration of both ovaries with much skin pigmentation, which disappeared after the removal of the ovaries. Other skin pigmentations, sometimes extensive, are observed in diseases where cachexia may heighten the resemblance to Addison's disease. Still they are generally bronzing *plus* cachexia, not bronzing *with* cachexia. Such phenomena have been reported in scurvy; in chronic tuberculosis, especially of the peritoneum; in cirrhosis, particularly in Hanot's hypertrophic cirrhosis with diabetes;[14] certain pancreatic affections, with and without diabetes; in old amyloid disease; in chronic splenic enlargement with and without chronic malarial poisoning; in pellagra; in "vagabond's" disease; inchronic rheumatoid arthritis; in exophthalmic goiter.

TUBERCULOUS AND OTHER LESIONS OF THE ADRENALS WITHOUT ADDISON'S DISEASE.

The records of the Boston City Hospital show the following cases of adrenal tuberculosis without bronzed skin:

Case V.—(I. Medical.) S. W., female, aged twenty-seven years, single; housework; rheumatism three years ago. Two weeks ago gave up work, tired out, weak, pain in right ankle; temperature, 102° F.; pain and tenderness of joints with fever continued. Nothing detected in the lungs. She died after six days. There was stenosis and insufficiency of mitral valve and an acute endocarditis involving mitral and aortic valves. Passive congestion of the lungs. Old tuberculosis of old apices with miliary tubercles about them. Both adrenals enlarged, in both firm, completely caseous areas, surrounded by some dense tissue, a small portion of gland substance remaining in each. No record in clinical or autopsy notes of bronzed skin.

Case VI.—May 26, 1902 (II. Medical). S. D., aged nineteen years, single; elevator boy. Malaria two or three times. Typhoid years ago. For three weeks "tired out," abdominal pain, diarrhea. Consolidation left base behind. Temperature, 102° to 103° F. Bowels continued distended, but patient rather more comfortable. After nearly two months temperature still up. Prolonged expiration and crackling râles throughout right chest; friction, right axilla; few dry râles, left chest. Abdominal examination negative. Tubercle bacilli present.

July 24.—Sharp pain in left side; friction rub.

July 28.—Intestinal hemorrhage; spasm right rectus muscle, tenderness right of and below umbilicus. Spasm and pain intense. Pulse 140; temperature normal.

These conditions, with increased abdominal distention continuing, he was transferred to the surgical side for operation, which was performed August 2. There was found intestinal tuberculosis, with perforation. Fistula persisted, and he died August 8.

At autopsy there was found chronic tuberculosis of right apex; tuberculosis of mesenteric lymph nodes with softening; peritonitis; disseminated tuberculosis of lungs, spleen, and liver; tuberculosis of adrenal and bile-duct. The left adrenal was enlarged, particularly in the middle portion. On section inner and outer edges of adrenal appear normal, but interposed between these two is a firm, yellowish-opaque mass, granular on section, sharply circumscribed, and roundly contoured, which occupies the middle portion of the adrenal. In this area no traces of adrenal structure can be made out. It is impossible to demonstrate gross continuity between this adrenal and a large tuberculous lymph node in its proximity. The right adrenal does not appear to have been affected. No skin pigmentation.

Case VII.—T. M. (II. Medical). This case, adult male, pathologically showed nothing but a general lymphomatosis, with persistence of thymus and of red marrow. There was no tuberculosis demonstrated except in the right adrenal, which was firmly attached to the right kidney in a fibrous capsule, looking something like an elongated node. On section the upper part shows characteristic pigmentation of adrenal, but lower two-thirds for a distance of 3 cm. shows on section an opaque, yellowish induration, which completely obscures adrenal structure. A node embraced in the same capsule with the adrenal shows similar yellowish center, which has advanced to a trace of caseation. No skin pigmentation present.

Other cases of extensive adrenal tuberculosis without Addison's symptoms are not wanting. For instance, Rolleston found in his 1,050 postmortems 18 cases where there was caseation in the adrenals (eleven unilateral and seven bilateral) without evidence of Addison's disease.

Lewin found 53 cases where the adrenals were tuberculous without skin bronzing.

Roloff relates a case of total bilateral tubercular inflammation of the adrenals, without bronzing.

That in such cases as the foregoing a certain amount of adrenal function is still possible, through the existence of "adrenal rests," or accessory adrenals, is entirely possible. These adrenal rests may be found not only in the loose connective tissue, but embedded in the kidney or liver. Rolleston found five of these of the size of grains of corn on one side in one case where the adrenal was caseated.

Of other adrenal lesions without skin bronzing the Boston City Hospital records afford several cases. For example, there are three of cancer, as follows:

One of the cases was found in a patient dead with pneumonia and gangrene of the middle and lower lobes. Carcinoma was not diagnosticated during life, but was found post mortem in the liver, with metastasis in the omentum, mesentery, pleural surface, retroperitoneal glands and left adrenal gland. There was a healed tuberculosis of the left lung, but no skin pigmentation.

The other adrenal carcinoma was in a patient dying with palpable tumor of the stomach, with carcinoma demonstrated post mortem in the stomach, and with metastasis in the liver, lymph glands, rectum, and adrenal. No pigmentation.

In another case where the surgical diagnosis was intestinal obstruction, there was carcinoma of the cervix, with extensive metastasis, including the adrenals. No pigmentation.

There were two cases of atrophy—one in a patient dead of operation for ablation of the Gasserian ganglion for facial neuralgia. Pancreas and adrenals were all atrophied. No skin symptoms.

A similar atrophy of both adrenals and pancreas was found in a patient dead of organic disease of the heart, with dyspnea, edema, etc., but without skin pigmentation.

Four cases classified as "adrenal tumors" were apparently all of the same structure as the gland itself. One was a small tumor found in a man with fractured rib and lacerated liver. A second was in a man dead with chronic and acute pulmonary tuberculosis. The autopsy showed tuberculosis to exist also in the intestine, the peritoneum, and there was hyperplasia of the bronchial lymph nodes. Slight chronic peritonitis. The adrenals were normal in size. In the right one was a small nodule, size of a pea, in the substance of the gland, yellowish white, paler than the cortex to which it is connected, homogeneous, contour sharply marked. The left adrenal has a small cyst (5 mm.), irregular contour, and containing a small amount of brownish fluid material. Microscopically this shows cells like the cortex. Despite the extensive tuberculosis elsewhere, these tumors of both adrenals do not appear to have been of that character. The patient had presented marked cyanosis, but no skin pigmentation.

A third tumor was found in the left adrenal, having the dimensions of 2x1.5x1.2 cm. It was composed of yellowish tissue like the cortex. The right was normal. The patient had died "uremic," with amyloid kidney, aneurism of the aorta, and obliteration of the pulmonary artery. No skin pigmentation.

A fourth tumor was larger, occupying the right adrenal gland, which measured 6x5x3 cm. It was yellow and firm, size of a walnut, yellowish-gray, capsulated. Does not thread out. Blood content low. The patient died of chronic bronchitis. No skin pigmentation.

A case of necrosis of the left adrenal was found in a patient with pancreatitis, and is interesting chiefly from its pathological features other than those connected with the adrenals.

The patient, a woman aged forty-nine years, had acute abdominal symptoms, with a somewhat vague tumor in the site of the left kidney, which it was thought might be a pyonephrosis. Operation disclosed a brownish-black, soft, pliable mass, the size of a small orange, posterior, inferior, and lateral to the left kidney. The kidney was normal in size, color, and consistency, with no distention of the ureter. Fat-necrosis was found. The mass was removed and the cavity drained. The patient survived nearly ten days. The autopsy showed necrosis of the pancreas. Wirsung's duct patent. No stones. The gall-bladder ducts were empty and patent, the common duct dilated, and two mulberry stones smaller than cherries were found in the gall-bladder. The necrosis involved, besides the body and chief part of the head of the pancreas and the left perinephritic region, the left adrenal gland. No skin pigmentation.

That the tuberculous element in the adrenals, however frequently it is found, is not the sole and essential cause of the Addison complex is suggested by the experiments of Vecchi,[15] who injected tuberculous bacilli into the adrenal glands of rabbits. A tuberculosis of these glands was produced and there was extension of the process to the central nervous system, but no pigmentation either of the skin or mucous membranes was produced. He believes that these symptoms of Addison's disease are the result of two factors, adrenal insufficiency and an intoxication produced by the tuberculous process. But if the tuberculous process is, as we have shown, not an indispensable part of the disease, why should we not return to what was practically Addison's own theory, that any disease involving adrenal inadequacy may produce the symptoms, and that the part played by tuberculosis is simply that it happens to be the most frequent destructive lesion of the adrenal?

In 1885, Hadden[16] noticed the similarity of lesion in his case of Addison's complex from interstitial atrophy of the adrenal to the lesion existing in the thyroid in myxedema. Osler[17] pointed out more in detail the analogies between the loss of an internal secretion, as producing in the case of the thyroid myxedema, and in the case of the adrenals, Addison's complex. It is interesting in this connection to note that Rolleston in 1896 had suggested that in certain cases of adenomata or hyperplastic tumors of the adrenals the

symptoms might be due to altered structure and depraved secretion, just as Graves' disease depended upon similar processes in the enlarged thyroid. The far greater frequency of destructive and atrophic lesions of the adrenals in connection with symptoms of Addison's disease, however, makes the analogy of myxedema seem more reasonable than that of Graves' disease.

If this analogy prove true, should we not expect a therapeutic triumph similar to that over myxedema in those cases of Addison's disease where the adrenal inadequacy is not overshadowed by the strong toxic influence of extensive tuberculosis? Dubois,[18] taking the ground that the disease is a continuous auto-intoxication from the lack of an excretory action of the adrenals, says in confirmation of that view that the therapeutic use of capsular extracts by injection always produces toxic phenomena and hastens death. But of late we know that some definite observations have shown the opposite fact. Cases have been reported by Osler,[17] Shattuck,[19] Deeks,[20] Porpelow,[21] and others, showing marked improvement and in some cases cure of the disease, with disappearance of bronzing, under the administration of adrenal extract. There is certainly ground for encouragement in trying this remedy wherever advanced tuberculosis is not present.

Dr. M. Foster[22] points out that the cortex of the adrenals is derived from the masses of mesoblastic cells surrounding the great blood vessels, while the medulla is derived from and is a modification of the sympathetic ganglia. The former suggests important metabolic processes, some of which are connected with the history of pigments of the body at large. The latter suggests peculiar nervous connections. In some animals he adds that these two are wholly separate bodies. Probably the more important functions of the organ reside in the medulla, in which, for instance, Abel[23] finds that the blood-pressure-raising constituent is contained. The total extirpation of the adrenals is fatal.

Two views have been held as to the function of the adrenal glands—one expressed by Huisneau[24] that they attract to themselves certain toxic products originating from intestinal decomposition (*e. g.*, pyrocatechin) and from muscle action (*e. g.*, phosphoric and lactic acids), rendering them harmless and preparing them for excretion by the kidneys. The other, that there is a synthetic production of a substance essential to the maintenance by the sympathetic system of the nutrition and normal tone. The latter view is at present more favored by physiologists. But it is perhaps easiest to explain the symptoms of Addison's disease by assuming that both these functions are fulfilled by the adrenals. The failure of the first enplains the toxemia, the failure of the second the pigmentary and other nutritional changes.

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MEDICAL PROGRESS.

SURGERY.

Excision of the Joint Capsule in a Gouty Toe.—The suggestion is made by RIEDEL (*Deut. med. Woch.*, August 25, 1904), that in suitable cases relief may be secured by removal of the urates and the joint capsule from the affected toe. He reports two cases in which this was done. In the first an operation was undertaken for what was believed to a suppurative arthritis, but on opening the joint, the latter was found to be filled up with urates. These were removed and the thickened joint capsule excised. The patient was relieved of his symptoms and remained free. He died twelve years later from some other disease. The second patient was a woman of seventy years, was operated under similar condition and also was free from further symptoms, until her death six years later from aortic stenosis. Riedel admits that the application of this procedure is limited to patients in whom the gouty process is thus localized and where it is general, the usual treatment must be followed. He advises leaving the wound open and packing it with iodoform gauze.

The Production by Surgical Means of New Anastomotic Channels for the Blood of the Portal Vein.—On the basis of later observations, S. TALMA (*Berl. klin. Woch.*, August 22, 1904) states that a negative answer must be returned to the question, does the operative deviation of the blood in the portal vein favorably influence hepatic cirrhosis. Another query, as to whether the attachment of the omentum to the abdominal wall diminishes the danger of hemorrhage from the overdistended veins of the abdominal viscera, may be answered by stating that the dilatation itself cannot be improved, but the danger of rupture is certainly lessened by the lowered blood pressure. Talma considers that omentopexy is indicated, however, whenever hematomesis is present as the result of hepatic cirrhosis. A case of portal thrombosis is reported, in which an operation was done, but without favorable results. The author is inclined to abandon the method, if it were not for the report of a case by Umber, in which numerous natural adhesions were found, which seemed to compensate for the presence of an obstructed portal vein that had evidently been in this condition for a number of years.

The Pathogenesis of Chronic Gastric Ulcer.—A satisfactory explanation of the chronic progressive ulcer has not yet been attained, according to W. G. MACCALLUM (*Am. Med.*, September 10, 1904) although a large number of investigations have been made. The opinion of most of these is that gastric ulcers may be produced by anything which produces a necrosis of the mucosa of the stomach and thus subjects it to the action of the gastric juice. While certain cases lend themselves to this explanation, there are others whose inception is obscure. The persistence of some of these ulcers offers the greatest difficulty of explanation and none of the theories advanced is satisfactory. MacCallum thinks that perhaps the great majority of ulcers do heal, and are recognized only later by the scars they leave, so that possibly Talma is right in saying that all ulcers tend to heal, but that frequently they last a long time because new ulceration occurs in the same spot.

Extirpation of Mucous Polypoids.—A polypus at times escapes the snare because it is too mobile, too low, too large or because its form is such that the wire loop slips over it. The best reason for this failure is that the snare, an excellent instrument for section is a poor one for prehension. Realizing this J. TOUBERT (*Arch. Inter. de Lary. d'Otol. et de Rhin.*, July, August, 1904) places the loop of the serrenœud over a long thin Kocher's forceps. The forceps with the noose around is manipulated with the right hand, the other being free to manage the speculum. The polypus is seized with the forceps which are self retaining, with them the polypus is held firmly, the noose is slipped along the forceps over the tumor, which by this combined manipulation is rendered easy. After section the polypus comes away, still held by the forceps.

Cicatricial Occlusion of the Nares.—This form of occlusion of the nares following variola is rather a frequent lesion. C. COMPAIRED (*Arch. Inter. de Lary. d'Otol. et de Rhin.*, July, August, 1904) states that while it may not be of great gravity in itself, it merits the close attention of the physician, because of the respiratory troubles it may produce, and especially because of the disfigurement that often results. If the latter take place, a plastic operation should be resorted to, which will depend mainly for success upon the postoperative treatment. The wound must be kept aseptic, and subsequent retractions prevented by the introduction of aseptic gause drains which later may be replaced by a sterile rubber or aluminum tube.

Ethyl-Bromide Anesthesia for Removal of Adenoids.—LAPAS (*Arch. Inter. de Lary. d'Otol. et de Rhin.*, July, August, 1904) recommends this narcosis as a means for the successful removal of adenoids and tonsils. Although it has the inconveniences of an early awaking of the patient and a contraction of the jaws, which at times is overcome only with greatest difficulty. Cases of death from its use have been reported. This anesthetic has three periods of action on the nervous system: (1) The cerebrum is anesthetized, the patient losing consciousness; (2) paralysis of the spinal cord and abolishment of reflex movements; (3) the bulb is affected, the heart with the respiration ceases and death results. From a surgical point of view the narcosis may be compared to a period of cerebral anesthesia with persistence of reflex movements, a period of complete anesthesia with paralysis of movements, a period of cerebral anesthesia with a return of movements. The first period lasts only a few seconds, the third, according to the deepness of the narcosis lasts from one to several minutes. It is these last two periods that are employed for the operation. The contents of a 20 gm. tube of ethyl-chloride is poured in a cone which is held firmly over the mouth and nose to prevent the access of air. Anesthesia accomplished, the head is held by an assistant and a mouth gag inserted. If contraction of the jaws is present it is overcome by putting a narrow tongue depressor between the jaws in the space just behind the molar teeth. It is absolutely necessary to have the patient held still when the reflex movements are present; in the case of a child this is easily done by an assistant, but with an adult it is necessary to have an operating chair in which the patient is bound. Although reflex movements return, the operation should be proceeded with, as the patient as yet has no sensation. If administered carefully there is no danger, the great advantage of this anesthetic being that immediately after the operation the patient is able to walk home.

Foreign Bodies in the Larynx.—F. MASSEI (*Arch. Inter. de Lary. d'Otol. et de Rhin.*, July, August, 1904) recommends for the removal of foreign bodies from the larynx, an instrument similar in construction and form to a small urethral sound, but the curve is more nearly at right angles than that of the sound. The distal end is blunt and bent near its extremity like a crochet hook. One should have four of these with the hooks turned in different directions. With one of these the author has drawn up an impacted chicken rib that resisted all attempts with a König forceps, even though a good grip was obtained.

The Spontaneous Cure of Cancer.—It has been claimed by a number of observers that the giant cells met with in carcinoma of the skin were to be considered as part of a curative process. R. BORMANN (*Deut. med. Woch.*, August 25, 1904) carefully examined over 250 cases on this point and although his observations agree with those of other investigators he considers that a wrong interpretation has been placed on their findings. He admits that the giant cells may form around foreign bodies, but that they do not surround living cells, particularly those of a proliferating new growth. If the latter occurred, a spontaneous cure might be spoken of, but there is no evidence that it takes place. In rodent ulcers, which may exist in a quiescent state for prolonged periods and where a process of this kind might be expected, nothing resembling it was found. The writer believes, moreover, that these giant cells are found in greater number in the rapidly growing forms of tumors, than in the slowly developing types of carcinoma. He disclaims that there is any such thing as phagocytic action, in which the giant cells play the main role, similar to that associated with the disposition of dead material in other parts of the organism.

Acute Pancreatitis with Recovery after Laparotomy.—Two cases, with a disseminated fatty necrosis in the abdomen, which have remained cured for over a year after operation, are reported by WIESINGER (*Deut. med. Woch.*, August 25, 1904). The prodromal symptoms in both cases comprised digestive disturbances, followed by severe epigastric pain, vomiting, absence of stools and flatus, alternating with periods of profuse diarrhea. The diagnosis was not made until the laparotomy disclosed the fatty necrosis scattered throughout the abdominal cavity. The author considers that this affords the most conclusive symptom, and where it is present, the blood-stained serum in the abdomen should be

evacuated, the bursa omentalis drained, but the viscera should be disturbed as little as possible. The operation should be done without a general anesthetic, if possible. In one of the patients, laparotomy was done a year afterward for another condition, and the areas of necrosis were found to have been fully healed.

PHYSIOLOGY.

The Protective Value of Proteids on Trypsin.—Arguing from recent researches, H. M. Vernon (*Jour. of Physiol.*, August 22, 1904), concludes that most, if not all, ferments are to some extent protected from the destructive action of acids or alkalies or high temperature by the presence of proteids. The evidence on the whole seems to indicate that such protection is exerted mainly by the proteid combining with the acid or alkaloid present, and so preventing it from reacting upon the ferment; but it might also be held to argue that some combination or interaction takes place between ferment and proteid. The researches of the author show that the former supposition is the correct one, although in certain cases a combination of ferment and proteid does occur.

Metabolism in Fasting and Feeding.—In a series of experiments performed on rats, E. S. Pembray and E. I. Spriggs (*Jour. of Physiol.*, August 22, 1904), find that during fasting the respiratory exchange quickly reaches a minimum, and then remains remarkably constant during the prolongation of the fast. The effect of food rich in carbohydrates upon the respiratory exchanges is well marked within an hour, and steadily increases during the next two or three hours. The increase in the output of carbon dioxide varied acording to the conditions from 14 to 97 per cent. of the minimal discharge during hunger; the increase in the absorption of oxygen was 9 to 35 per cent., but in three cases it fell below the minimal discharge during hunger. This decrease in the absorption of oxygen may be explained, as Zuntz and Lehman suggest, by the fact that carbohydrates yield more heat from their oxidation than do fat and proteid, when the consumption of oxygen is equal in the two cases, and thus the animal can satisfy its needs of energy by a smaller absorption of oxygen. On the other hand it might be due to diminished muscular exercise of the feeding. The increase in the discharge of CO_2 after a meal appears to be due to a general increase in the metabolic processes of the body, including the formation of fat, and not solely to the work of digestion. A fast preceding a meal serves as a marked stimulus to the assimilation of food.

The Spinal Respiratory Centers.—The researches of Rokitansky, Langendorff and Wertheimer, have revealed the presence of spinal respiratory oblongata. This fact is confirmed by A. Mosso (*Arch. Ital. de Biol.*, May 31, 1904) In experimenting on kittens the author found that on completely severing the cord just above the first cervical nerve, and by keeping the animal warm and by maintaining artificial respiration until the effects of the shock have passed off, at the end of forty minutes the cat takes six or seven respirations, each followed by four or five feebler ones. This form of restored breathing might be characterized as a periodic one, phases of repose alternating with phases of activity. The spinal respiratory centers are rapidly exhausted, and the breathing becomes shallower and shallower until it finally ceases. The renewal of artificial respiration restores spontaneous breathing which is more vigorous than before. The respiratory curve resembles that seen in asphyxia. It is probable that the respiratory cells in the spinal cord have the same function as those in the medulla oblongata, and react in the same way to asphyxia.

Carbon Dioxide in the Blood in Diabetic Coma.—An analysis of the quantity and presence of carbon dioxide in nervous blood and in alveolar air in cases of diabetes and diabetic coma, revealed to A. P. Beddard, M. S. Pembrey and E. I. Spriggs (*Jour. Physiol.*, August 22, 1904), that it is probable that the respiratory center is stimulated by other substances than carbon dioxide, and that in coma the hyperpnea, which is marked by the depth of the inspiration and expiration, reduces the volume of carbon dioxide in the nervous blood, for it has already been shown that the pressure of the alveolar carbon dioxide fall to 2.2 per cent. of an atmosphere. Lehman showed that weak acids stimulated the respiratory center, and Geppert and Zuntz, from an examination of the gases in arterial and venous blood, came to the conclusion that the hyperpnea produced by muscular exercise was due to some products of metabolism and not to an increase of carbon dioxide or a decrease of oxygen in the blood. During the treatment of patients suffering from diabetic coma by the injections of solutions of sodium bicarbonate the typical deep ventilation of the chest disappears. The author's observations do not support the view that the low proportion of carbon dioxide in the venous blood in diabetic coma is directly dependent on the reduced alkalinity and a reduced carrying power of the blood for that gas. They suggest that the hyperpnea is a cause and not an effect of the reduction of the carbon dioxide in the blood.

The Elasticity of Animal Tissues.—What is known as Hooke's law, namely, "that the power of any spring is in the same proportion with the tension therof," is found by J. B. Haycraft (*Jour. of Physiol.*, August 22, 1904), to be applicable to all the simple tissues of the body when they are stretched within physiological limits. The relaxing appears to vary and Hooke's law is not always observed. The different tissues vary in the time that they take to recover their former length.

The Relation of Adrenalin to Muscular Fatigue.—The highly practical and novel researches on this subject by S. Dessy and V. Grandis (*Arch. Ital. de Biol.*, May 31, 1904), were inspired by the following experiments and observations of other authors. In 1891-92 Abelous, Langlois and Albanèse, observed that animals deprived of the suprarenal capsules are incapable of performing prolonged muscular actions and that they rapidly succumb to a short exertion. These results the above experimenters attribute to the fact that the internal secretion of the suprarenals neutralizes the toxic products of the muscular contraction. This observation served to explain the clinical experience that individuals affected with Addison's disease present a marked degree of adynamia. Battelli found that during fatigue the quantity of adrenalin in the suprarenal capsules diminishes, and that during the hours consecutive to an intense degree of work, the suprarenal capsules contain an amount of adrenalin greater than the normal. This observer based these facts upon the hypothesis that adrenalin passes into the circulation in order to neutralize the depression produced by muscular work. He explained the later increase in the amount of adrenalin by the supposition that the organs, particularly the muscles and nerves, produce a proto-adrenalin, which the suprarenal capsules transform into adrenalin. The authors of the present paper, considering this explanation too complicated, sought more direct reasons for this phenomena. They studied the effect of adrenalin upon a muscle which had passed into fatigue. They found that

when, after a long series of contractions, the muscle has lost its power to contract, if 2 c.c. of an aqueous solution of suprarenal capsule be injected into the dorsal lymphatic sac (the solution being prepared by dissolving 5 gr. of dried suprarenals in 100 c.c. of distilled water), after from two to eight minutes, the muscle begins again to contract, and continues to do so for a period longer than that seen at the beginning of the experiment. On examining the graphic curve, it is found that the adrenalin, while neutralizing the effect of fatigue, does not do so entirely, for the renewed contractions are not as strong as those seen after a period of normal repose. This deficiency of strength is probably to be attributed to certain changes produced in the muscular fibers apart from the action of the toxic products of the muscular contratcion. The authors found that animals which have been for a long time in the condition of fasting, possess a greater susceptibility to the fatigue-neutralizing action of adrenalin. One might say that the suprarenal capsules, of all the organs, are the ones which are the most profoundly affected by fasting. Probably to the absence of the function of the suprarenals may be attributed the muscular debility characteristic of an insufficient diet. The researches of the authors show that a fatigued muscle, in spite of the large amount of work accomplished, has not in reality exhausted all its energy, since, without resting an instant, it can begin again to contract, by receiving a small quantity of adrenalin. It would appear that the latter drug neutralizes the action of the toxic substances produced during the muscular contraction. But the suprarenal capsules cannot counteract entirely the effect of muscular fatigue. One is lead to the conclusion that the muscular substances is affected by the contraction, so that, in spite of the protection afforded by the suprarenal capsules, the time comes when the muscle can no longer contract. It is therefore necessary to restrict the term "muscular fatigue" to the disability which cannot be overcome by adrenalin. From the study of the action of adrenalin on unstriated muscular fibers, the authors draw the general conclusion that this substance acts upon the contractility of protoplasm. The hemostatic power of adrenalin probably depends upon the fact that the latter, in neutralizing the products of contraction, permits the vasoconstrictor nerves to develop their entire activity and to keep the small vessels contracted for a long time. In the same manner may be explained the rapid and brief increase in blood pressure following the injection of adrenalin, which increase is dependent upon the action of this substance upon the myocardium and upon the muscular tunic of the arteries. The action of adrenalin is a transient one, since this secretion is rapidly oxidized by the arterial blood.

Intra-ocular Circulation and Intra-ocular Pressure. The pathology of glaucoma will probably be illuminated by new researches in the various factors that influence the pressure inside the eyeball. An interesting investigation into this domain has been conducted by E. E. Henderson and E. H. Starling (*Jour. of Physiol.*, August 22, 1904). They find that the intra-ocular pressure is a function of the pressure in the ocular blood vessels, and varies directly as this latter. The intra-ocular pressure rises and falls with the general arterial blood pressure, and is not appreciably affected by a certain degree of rise in the pressure in the great veins. Stimulation of the sympathetic (head end) causes a preliminary rise in intra-ocular pressure, due to contraction of the orbital unstriated muscle, followed by a slow fall of pressure occasioned by contraction of the intra-ocular blood-vessels. Stimulation of the peripheral end of the divided fifth nerve root causes a rise of pressure due to contraction of the orbital unstriated muscle. This effect is absent if the fibers coming to the Gasserian ganglion from the sympathetic nerve degenerated in consequence of preliminary extirpation of the superior cervical ganglion. There is no evidence of vasodilator fibers to the eyeball either in the fifth or cervical sympathetic nerves. Previous statements to the reverse effect are based on imperfect experimentation. The effects of adrenalin and nicotin on the eye vary according as the local or general effect in the blood vessels predominated.

The Union of Different Kinds of Nerve Fibers.—Of eminent practical importance from the viewpoint of recent surgical progress in the anastomosis of nerve fibers, are the results of the experiments of J. N. Langley and H. K. Anderson (*Jour. of Physiol.*, August 22, 1904), upon the limitations to the possibility of uniting different kinds of nerve fibers. The experiments were made on cats and rabbits. When the central ends of two limb nerves are joined, no functional union takes place between them; impulses set up in one nerve cannot pass across to the other. When the central end of a limb nerve has an opportunity of joining with two peripheral nerves, stimulation of one peripheral nerve, after complete severance of the conjoined nerves from the central nervous system, may cause contraction of the muscles innervated by the other. The authors consider this to be an axon reflex, set up in fibers from the central end, one branch of which has joined one peripheral nerve and the other branch joined the other peripheral nerve. When one of the peripheral nerves consists entirely of afferent fibers an axon reflex may still be produced by stimulating it. Since efferent nerves do not, so far as is known, unite with afferent fibers, the axon reflex obtained supports the view that regeneration takes place by a down growth of axis cylinders. The crural nerve can make functional union with the sciatic and can be artificially lengthened. This is in harmony with Bethe's observation that the sciatic can be elongated by joining it with the sciatic of the opposite side. The authors do not find that when the internal saphenous nerve is joined to the sciatic nerve there is produced a motor effect. The phrenic nerve when united with the cervical sympathetic, can cause the usual effects produced by stimulating the latter nerve. The authors confirm Mislavsti's result that the cervical sympathetic can unite with the recurrent laryngeal nerve and cause movement of the vocal cords. Also after union has taken place, section of the cervical sympathetic causes degeneration of the medullated fibers in the recurrent laryngeal, except for a few which arise from the superior laryngeal nerve. The cervical sympathetic can unite with the phrenic nerve and cause contraction of the diaphragm. It can also unite with the spinal accessory and cause contraction of the sternomastoid muscle. They do not find that either (*a*) the afferent fibers proceeding centrally from the ganglon of the trunk of the vagus, or (*b*) the afferent fibers proceeding peripherally in the great auricular nerve, or (*c*) cutaneous afferent fibers can unite with the peripheral end of the cervical sympathetic in such a way as to transmit nervous impulses to it or to the superior cervical ganglion. Nor do they find that the cervical sympathetic after excision of the superior cervical ganglion—can make functional connection with the fibers leaving the anterior end of the superior cervical ganglion. Preganglionic fibers cannot make functional connection with postganglionic fibers. They do not find that the postganglionic fibers leaving the anterior end of the superior cervical ganglion can make connection with the hypoglossal fibers supplying the tongue muscles, although they do this with the vasomotor

fibers of the hypoglossal. The following general conclusions are drawn: The central end of an efferent fiber can make functional connection with the peripheral end of any other efferent fiber of the same class, whatever be the normal actions produced by the two nerve fibers. There are three classes of nerve fibers as regards the possibility of their union: *A*, Efferent fibers proceeding from the spinal cord, *B*, Postganglionic nerve fibers (the efferent fibers given off by the peripheral ganglia), and *C*, Afferent nerve fibers. Functional union is not possible between fibers of Class *A* and Class *B*. With regard to the union of afferent nerves with efferent nerves and vice versa, the term functional union is inappropriate. The authors confirm the experiments of Schwann and Schiff, which show that in the nerves of the limb afferent fibers when joined to efferent fibers, do not acquire any motor action. The possibility is not excluded that afferent fibers may grow down the course of the efferent fibers, and form afferent nerve endings, which from character or position, are incapable of transmitting impulses to muscle, gland, or motor nerve-cells. The influence which impels the cut ends of various nerve fibers to grow to one another, appears to be of a chemioactic nature, which influence has numerous gradations. The nerve fibers of the three classes mentioned above are incapable of coalescing with one another. Whether the regeneration, which takes place when fibers of the same class are united is due to coalescence or to down growth, the authors regard as an open question, notwithstanding the interesting researches of Bethe.

Reaction of Thymus to Assimilation of Calcium Salts.—Like other authors, the experiments of F. SINNHUBER (*Zeitsch. f. klin. Med.*, Vol. 54, Nos. 1 and 2), lead him to believe that the thymus possesses no functions of value to postembryonal life. Its extirpation does not influence the absorption and assimilation of lime salts, and it stands in no relation with rachitis. The atrophy or hypertrophy of the thymus seen in this disease, is simply a manifestation of the same constitutional disturbance which causes the diminished amount of calcium in the bones. The ingestion of thymus glands has no influence upon the excretion of lime, but slightly increases the amount of nitrogen voided. Large doses of thyroidin, on the other hand, considerably increases the amount of calcium and nitrogen in the urine.

THERAPEUTICS.

Serum Treatment of Acute and Chronic Articular Rheumatism.—D. MENZER (*Münch. med. Woch.*, August 16, 1904), states that better results in the treatment of acute and chronic articular rheumatism have been obtained from the use of antistreptococcus serum than from any other medicine. Chronic cases, if not cured, are materially improved and in acute cases an endocarditis will heal more readily. As proof of the latter fact a case is cited which presented well-marked increase in cardiac dulness with presystolic and systolic murmurs at the apex during an acute attack, but two years after treatment there were no longer any definite signs of endocarditis. Since the serum may render acute chronic inflammatory processes, it should be used with caution in pericarditis, or marked pleurisy, or advanced mitral stenosis. In acute cases single doses of 5 c.c. should be employed, while if chronic, several periods of treatment are necessary. The other measures employed for rheumatism are also in place but salicylates need not be given.

A New Digitalis Preparation.—The great drawback in giving digitalis, lies in the fact that the drug is of varying strength and different preparations may thus give rise to a varying therapeutic effect. Though all the active principles of the drug are contained in digitoxin, the main glycoside of the leaves, this has not come into general favor, since insoluble and irritating and entirely unfit for hypodermic use on account of the necrosis it is liable to set up. By means of a very complicated process, M. CLOETTA, (*Münch. med. Woch.*, August 16, 1904), has finally succeeded in isolating an amorphous digitoxin which is much more soluble in water than the crystalline substance. It has been placed upon the market under the name digalin, in solution, of such strength that each cubic centimeter corresponds to 0.3 milligram, the average dose. After injecting, it is advisable to employ gentle massage and to cover the spot with a wet dressing. The physiological action is exactly the same as that of digitalis.

Active Principle of Male Fern.—The chief disadvantages of male fern as a therapeutic agent are its varying strength, disagreeable taste and irritating properties manifesting themselves in vomiting and intoxication. All the different principles occurring in male fern have been carefully tested by A. JAQUET. (*Therap. Monatshefte*, August, 1904). It seems that all the active properties are contained in the amorphous acid filmaron, which constitutes about five per cent. of the extract. Filicic acid and albaspidin are also anthelmintic but to a less extent and are also less abundant in the extract. The average dose of filmaron is 0.7 gmes. and patients very rarely experience other after-effects besides slight nausea or transient abdominal cramps. In efficacy it seems to be almost equal to the fresh extract from the rhizome.

Properties of Stypticin.—The hemostatic properties of stypticin, the hydrochlorate of cotarnin were not discovered by accident, but were predicted on account of the close relationship of this drug to hydrastinin. M. FREUND, (*Therap. Monatshefte*, August, 1904), has seen excellent results in climateric hemorrhage, hemorrhage of pregnancy fibroids and subinvolution, in reflex hemorrhage due to disease of the adnexa or the parametrium and in the congestive bleeding of young girls without pathological lesion. Recently a new preparation of stypticin has been placed upon the market under the name of styptol. It is the phthalate of cotarnin and possesses no advantages over stypticin since it is changed into the latter in the stomach. The usual dose of stypticin is 0.05 gm. six to ten times a day, but much more may be given, since it is in every way harmless.

Treatment of Anemia.—Arguing from the standpoint that chlorosis is an intoxication, C. S. ENGEL, (*Zeitsch. f. klin. Med.*, Vol. 54, Nos. 1 and 2), injected small quantities of the blood of a severely anemic girl into a rabbit, in the hope of bringing about the formation of an antibody. After a certain time, some serum was withdrawn from the animal, heated for half an hour to 58° C. and one cubic centimeter injected into the patient. The reaction following was very severe, but subsequent doses were better tolerated, so that only slight headache was complained after the eighth and last dose. Though the patient had continually lost ground with arsenic and iron medication, she picked up wonderfully during the two months the injections were given, and when seen, a year later, the blood contained 90 per cent. hemoglobin and 4.8 million red cells.

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PRESENT POSITION OF GRAVES' DISEASE.

When about the end of the first quarter of the nineteenth century Dr. Robert Graves, of Dublin, described two cases of nervous disease suffering from special symptoms including rapid heart with prominence of the eyes and a goiter in the neck there was no thought that he had described an important nervous affection. Not for several years later were further cases of the same disease detected and described on the Continent. Even after it had come to be generally recognized that this was a special symptom complex, deserving a separate name in nosology, it was considered to be a rare condition. After three-quarters of a century there is a growing conviction that the disease is much more frequent than has been thought, that it may occur with any two of the classical triad of symptoms absent and that milder forms of the disease may be comparatively so latent as to require special care for their recognition.

While it has more than once been suggested that Graves' disease is not due to a disturbance of the thyroid gland but to some other ductless glands, there has always been a recurrence to the idea that the most probable basis of the affection is a superabundance of thyroid secretion in the system. Last year we called attention to Dr. McCallum's experiments of animals deprived of the parathyroids which seemed to show that an affection resembling Graves' disease developed in the deparathyroidized animals. We know, however, from experiences here in New York and elsewhere that the therapeutic suggestion made as a consequence of these observations to prescribe extract of parathyroids or the dried substance of these glands from animals for sufferers from Graves' disease, has not proved successful in practice. On the other hand, it is well known that the use of thyroid extract or desiccated thyroids always causes an exacerbation of the symptoms of Graves' disease and that therefore the possible etiology of the affection is the hypersecretion from this gland.

That there should be a functional disturbance of the thyroid, temporary in character leading to symptoms of Graves' disease, not necessarily severe, yet more or less typical and representing deviations from the normal health in nervous individuals, would not be surprising. The exactly opposite condition of myxedema, in which there is apparently a deficiency of thyroid secretion, occurs typically in those in whom the gland is absent, but milder forms of the disease and certain analogous manifestations have been known to occur without necessarily being accompanied by lasting changes in the soft parts or any serious constitutional disturbance. It is generally recognized now that functional disturbance of the thyroid with a tendency toward deficiency of secretion may produce a number of symptoms in children which are favorably affected by the administration of small amounts of thyroid extract or desiccated thyroid substance. During the period just before and after puberty the tendency exhibited by certain young people to take on an abnormal amount of flesh has been found to be associated with some disturbance of the thyroid secretion, which can be modified with good effect by the administration of thyroid material.

It is not surprising that milder cases of Graves' disease should occur with symptoms so latent or concealed under the mask of neurasthenia, or nervous weakness of some kind, that their real origin is not recognized. At times such cases may occur without noticeable goiter and a series of such cases have recently been published by Dr. William H. Thompson. Occasionally these cases without goiter, may be quite severe in their other symptoms. The theory of Graves' disease, which has met with most acceptance, is that some poi-

sonous material within the body is destroyed by means of the thyroid secretion. The presence of this toxic material in larger quantities than normal so irritates the gland that more thyroid secretion is poured out than is necessary with the consequent production of the symptoms of Graves' disease. It is probable that in some cases the thyroid fails to enlarge, even though it does respond to the irritation and that its increased secretion fails to be neutralized in the way usually provided for it by substances ordinarily absorbed from the digestive tract.

The most successful treatment of Graves' disease continues to be the careful management of the alimentary tract. It is a rule almost without exception that in Graves' disease there are annoying symptoms of gastric and intestinal indigestion. Alternating constipation and diarrhea is the characteristic history. Whenever the condition of the digestive tract is improved the symptoms of the affection almost invariably grow better and even symptomatic cures may occur. There always remains a tendency to relapse, showing that there probably was originally some pathological condition, either in the thyroid glands, or in the absorbent apparatus of the intestines, but the improvement that can thus be obtained is often very remarkable. It would seem that the modern clinician instead of grouping a number of puzzling cases with nervous symptoms and a marked tendency to rapid heart, under such vague terms as neurasthenia or nervous tachycardia, should bear in the mind the possibility of Graves' disease being present in these cases and should direct his treatment and announce his prognosis of the ailments of such patients with these considerations in mind.

ULCER OF THE DUODENUM.

While it was generally conceded that ulcer of the stomach was by no means infrequent until very recent years, it has been the custom to regard ulcer of the duodenum among the rarities of clinical experience. It is not only much rarer than ulcer of the stomach, but by a curious anomaly it is said that while ulcer of the stomach was much more frequent in women, ulcer of the duodenum occurred much oftener in men.

It appears, however, that the better part of our supposed knowledge of ulcer of the duodenum has been founded on lack of due information. Unless special symptoms called for it the duodenum was not often opened at autopsy and recent studies seem to show that many an ulcer in this portion of the tract has thus escaped discovery.

It is generally conceded that ulcer of the stomach may not infrequently run its course absolutely without any symptom, and many perforations of the stomach wall from ulcer have occurred without a single salient feature of the history that would indicate the presence of a gastric ulcer. The same has probably been even more common with ulcers of the duodenum. At the last meeting of the American Surgical Association Dr. W. J. Mayo and Dr. Christopher Graham, of Rochester, Minn., presented a clinical study of 41 cases of ulcer of the duodenum on which they had performed operations. The very fact that the service of one should furnish so many cases to report shows that this lesion is by no means as infrequent as has been thought. In more than one-fourth the cases there was coincident ulcer of the stomach. Indeed so commonly is the duodenal ulcer associated with severe gastric ulcer that Dr. Mayo advises that the incision for operation upon a case of gastric ulcer be planned with the idea of allowing careful investigation of the duodenal region. For this purpose he suggests that the incision should always be made well to the right of the median line.

The frequency of ulcer of the duodenum may demand more careful investigation as to another long-accepted idea with regard to its occurrence in connection with extensive burns. It is a text-book tradition that in these cases severe duodenal ulcers are likely to be found if the patient has survived the accident for some time. This relation is so well known that no one now makes an autopsy on a subject that has died from a burn without careful examination of the duodenum. The consequent investigation has led to the confirmation of the suspicion that duodenal ulcers have not been found in every case, but only in a notable proportion of the cases. Whether the finding of duodenal ulcer in these cases may not be only a coincidence due to the unsuspected frequency of a lesion which is not necessarily connected with the burn, remains to be determined; but there are many medical traditions that have been accepted on less trustworthy evidence than this.

In the meantime duodenal ulcer, like many other diseases formerly considered so rare as to be medical curiosities, must now take its place among the possibilities always to be considered when there are obscure abdominal symptoms

Affections of the biliary tract are receiving so much attention that discomfort and tenderness in this abdominal quadrant is almost sure to be taken for some biliary complication and the most careful differentiation will be needed. The adhesive inflammation around a duodenal ulcer is likely to involve the bile passages, so that the primary lesion may be impossible of determination. There is no doubt, however, that some of the supposed cases of malignant disease in this region have been chronic inflammatory and cicatricial conditions arising from old but unsuspected duodenal ulcers. Thus another reason for hope in what used to be considered fatal cases is now held out.

ECHOES AND NEWS.

NEW YORK.

Cornell University Medical College.—Dr. Frederick Whiting has been appointed Professor of Otology in place of Dr. Gorham Bacon, resigned. Dr. Adolf Meyer has been appointed Professor of Psychiatry in place of Dr. Allen McLane Hamilton, resigned. The students registered for the coming first year class, to begin work on September 28, are largely in excess of the numbers of any previous class at this date, and it is exceedingly gratifying to note that the campaign carried on so vigorously in the medical press for better preliminary education is beginning to bear fruit, for 78 per cent. of those applying present evidence of having had chemistry and physics.

Pharmacists Protest.—Pharmacists all over the city are preparing earnest protest against the recent amendment to the Sanitary Code, prohibiting the sale of carbolic acid at retail except in the form of four or five per cent. solution. The Kings County Pharmaceutical Association has already appointed a committee to arrange with other pharmacists' organizations in the greater city for common appeal. The complaint of the druggists is that the prohibition of the sale of the acid, while it will not accomplish its purpose, that of making suicide more difficult, will inflict a great hardship on the public, who use carbolic acid more than any other agent for disinfectant purposes. At the same time they assert that an intending suicide can go to a wholesale drug house and buy the acid in the original package without question, and a child can do this as easily as an adult. In the notice of the new carbolic acid regulation it is stated that, while the Department of Health does not desire to pursue the drug trade particularly, if carbolic bottles bearing the name of a drug firm are found by the Coroner's office by the side of suicides, the department will take action against such druggists through the District Attorney's office.

Columbia's Opening Exercises.—The exercises to mark the opening of the one hundred and fifty-first academic year of Columbia University, will be held in the University Gymnasium on Wednesday, September 28 at 3 P.M., and will be open to the public. The address will be delivered by Professor Robert Simpson Woodward, Dean of the Faculty of Pure Science, whose subject is to be "Academic Ideals." The exercises this year will be marked by the presence of the Archbishop of Canterbury, one of whose predecessors in office was the first *ex-officio* trustee named in the original charter of King's College. Upon the conclusion of the exercises in the Gymnasium, the Archbishop of Canterbury will formally dedicate to religious uses the site upon which the new University Chapel is to be built. The Archbishop will be escorted to his place upon the platform in the Gymnasium by an academic procession consisting of the officers of instruction and of the members of the boards of trustees of the several corporations included in Columbia University. Seats will be reserved upon the floor of the Gymnasium for the students, grouped according to schools, and also for members of the families of the trustees and officers of instruction.

College of Physicians and Surgeons.—The opening exercises of the academic year 1904-5 will be held in the Lower Lecture Room on Thursday, September 29, 1904, at 3 P.M. After a brief address of welcome by the President of the University an address will be delivered by John G. Curtis, M.D., Acting Dean and Professor of Physiology, upon "Our Medical Training in the Light of Ancient Error."

PHILADELPHIA.

Typhoid Again Increases.—During the past week 134 cases of typhoid fever were reported, an increase of 34 over the preceding week. The effect of filtered and mixed water in West Philadelphia is being carefully watched.

Trolley Cars to be Improved.—The Philadelphia Rapid Transit Company is at last beginning to remove the plush and carpet-covered seats from their cars and replace them by rattan. This was the subject of a great deal of comment during the past year by individuals and societies, particularly those for the prevention of tuberculosis. Reforms will come if the people persist in demanding them.

Hospital Patients Alarmed in Queer Way.—During the severe storm of last week a limb blew against the steam whistle of the Pennsylvania Hospital engine house and the shrill whistle, which is used only in emergency cases, was kept blowing for ten minutes while the storm was at its height. The patients were all alarmed and a negro who had been stabbed some days before died during the excitement.

No Law Against Selling Babies.—Though the papers of the city have recently exposed several places where infants are bought and sold, officials say there is at present no law by which those engaged in the business can be prosecuted. The only hold is in arresting the people for cruelty and this is seldom possible as the infants are cared for perhaps better than at home. Instances are known where infants are loaned over night for $3 to $5.

Opening of Medical Colleges.—The Woman's Medical College of Pennsylvania opened on Wednesday, September 21. The exercise included inspection of the new pavilion hospital and dispensary. In the Freshman Class are two students from India. The Jefferson College opens September 26, the Medico-Chirurgical September 28, and the University of Pennsylvania on September 30. The Philadelphia Polyclinic opens on October 3.

CHICAGO.

First Aid to the Injured.—It is said that the casualty list incident to the rush of modern industrial life has grown so appalling in the last year that an organized effort is being made in Chicago to instruct individuals in the best methods of giving first aid to the injured. The Chicago First Aid Society, consisting of prominent doctors and laymen, which has been formed for that purpose, is pushing its work. The course of public instruction will consist of a series of lectures which will include elementary lessons in anatomy and physiology. In-

struction will be given in bandaging and how to treat shocks of electricity. Methods of treating broken bones, sprains and dislocations will also be taught. The medical board, which will award certificates and badges to graduating members, is made up of Drs. Nicholas Senn, Charles Adams, R. N. Foster, Arnold C. Klebs, Henry B. Favill, James B. Herrick, N. S. Davis, S. C. Stanton, John Ridlon, John B. Murphy, Wm. E. Quine, and Geo. Webster. No charge is to be made for the instruction.

Insanity on the Increase.—According to interviews with several physicians, in the Chicago *Evening Post* of recent date, this disease is increasing at an alarming rate. Dr. Warren H. Hunter, of the Chicago Detention Hospital, said: "It is a mistake to suppose that many patients become deranged from the strenuous life of the city and overwork—it is not the work, but the stimulants used by man to push him on, against the warning of nature, like whipping an exhausted horse into action. If the overworked man would not keep up on drugs nature would give him the needed rest in the form of an illness, but under the whip lash of stimulants, when he does collapse, having no reserve resistance, he often becomes deranged."

Benefit Concert for Samaritan Hospital.—On the evening of September 16, a benefit concert for the Samaritan Hospital was given at the Coliseum. The Coliseum Company donated the use of its building, and Brook and his band furnished one of the best programs of the season. It is the only opportunity this year that the public has had to help this hospital. Though a charity, the Samaritan Hospital is doing good work. In the absence of a down-town emergency hospital, practically all of the victims of accidents which happen in the down-town district are taken there. The police have been accustomed to take unknown victims of accidents to the Cook County Hospital, but many lives have been saved by hurrying to the near-by Samaritan, where immediate medical attention may be had. At the time of the Iroquois disaster, the Samaritan cared for twice as many of the injured as any other hospital. No patient has ever been refused at the hospital.

Sir Felix Semon Entertained.—This distinguished physician was given a dinner by the Chicago Laryngological and Climatological Society at the Chicago Club, September 15.

Appointment of Dr. Wald.—Dr. O. E. Wald has received the appointment of Chief Surgeon of the Bethesda Hospital.

Chicago Day at the Louisiana Purchase Exposition.—Drs. Arthur D. Bevan and James Chvatal have been nominated on the committee to represent Chicago on October 8.

CANADA.

Canadian Medical Association. -The thirty-seventh annual meeting of the Canadian Medical Association was held in Vancouver, B. C., on August 23, 24, 25 and 26, under the Presidency of Dr. Simon J. Tunstall, of that city, the General Secretary being Dr. George Elliott, of Toronto. It was the first time that the Association had held a meeting in the Pacific province, and every expectation of a good and a largely attended meeting was fulfilled. The following guests were introduced to the meeting at the opening session: Mr. Mayo Robson, of London, England; Prof. E. C. Dudley, of Chicago; Prof. W. Japp Sinclair, of the Victoria University, of Manchester; Dr. McGillivray, of Edinburgh, Scotland; Dr. C. H. Mayo, of Rochester, Minn.; Dr. Oviatt, of Oshkosh, and Dr. Kenneth McKenzie, of Portland, Oregon. Mayor McGuigan, of Vancouver, who is a graduate in medicine of McGill University, delivered an address of welcome on behalf of the citizens of Vancouver, and he was followed by Dr. J. C. Davie, of Victoria, B. C., vice-president of the British Columbia Medical Council, who delivered the address of welcome for the profession of British Columbia. Dr. R. E. McKechnie, of Vancouver, proposed a resolution favoring the establishment by the provincial authorities of each of the provinces of Canada, of sanitaria for the treatment of cases of tuberculosis, which resolution was carried unanimously. The General Secretary, Dr. George Elliott, of Toronto, submitted his annual report. He urged that the Association be reorganized with branches throughout the Dominion. Dr. C. J. Fagan, of Victoria, B. C., secretary of the provincial Board of Health of British Columbia, read a paper on Patent Medicines, which brought out a keen discussion and resulted in the formation of a special committee to draft a resolution on the subject. This committee subsequently reported in favor of memorializing the Federal Government with regard to the formulæ being printed on all patent medicines offered for sale in open market. When the afternoon session was called to order, President Tunstall read the following telegram from Dr. Wolfred Nelson, of New York, which elicited much applause: "Thanks for kind invitation. I greatly regret cannot attend meeting. The press here, medical and lay, refers triumphantly to Osler's appointment as Regius Professor of Medicine at Oxford. King Edward approved it. Osler has accepted for next year. God bless dear old Canada, McGill and Osler." Dr. R. E. McKechnie, of Vancouver, then delivered the Address in Medicine. Mr. Mansfield, Fleet Surgeon on H.M.S. Grafton, was down for the exhibition of a new color-test apparatus, which in his absence was explained by Dr. Glen Campbell, of Vancouver. Dr. Kenneth McKenzie, Portland, Oregon, then read a practical and interesting paper on Movable Kidney, and was followed by Dr. Robert H. Craig, of Montreal, who reported several interesting and rare cases of a nasal nature. In the evening at the Hotel Vancouver, a conversazione was given by the local members of the Association, which proved a brilliant affair. At the morning session of the second day, Mr. Mayo Robson delivered the Address in Surgery, accompanied by a lantern demonstration, on the pancreas and the diseases of that organ. Of the many good papers and demonstrations of the meeting, this was undoubtedly the best, attracted a full representation of the members present, and was listened to with rapt attention throughout. At the conclusion a cordial vote of thanks was tendered Mr. Robson, moved by Dr. F. J. Shepherd, of Montreal. Following this was a paper read by Dr. Shepherd on Hernia of the Bladder complicating inguinal hernia, which was discussed by Dr. A. A. Macdonald, of Toronto, Dr. H. Meek, of London, Ontario, Dr. Secord, of Brantford, and Dr. Eagleson, of Seattle. Dr. S. R Jenkins, of Charlottetown, P. E. I., then reported a Case of Hyperthrophy of the Breasts. At the afternoon session, Dr. J. W. Sterling, of Montreal, contributed a paper on Diseases of the Eye, and was followed by Dr. Cruickshank, of Windsor, Ont., with a paper on Therapeutic Hints from Bacteriology. A reception was held in the afternoon by the ladies of Vancouver at Pender Hall, and in the evening the President delivered the annual presidential address, dealing mostly with questions pertaining to the medical politics of the Dominion of Canada. Following the presidential address, Dr. E. C. Dudley gave a very able address in Gynecology, illustrated with lantern slides, which proved one of the features of the meeting and was very much appreciated by all present. Following Dr. Dudley's address, the plans of the fine new hospital which Vancouver is erecting were projected on the

canvas, which soon made it apparent that Vancouver promises to have the finest hospital in the Dominion. At the morning session of the third day Dr. C. H. Mayo, of Rochester, Minn., read an able paper on Tuberculous Peritonitis. He was followed by Dr. Henry Howitt, of Guelph, Ont., who, as usual, had something new to report. This time his subject was: Meckel's Diverticulum, with a Report of Cases. Dr. C. W. Wilson, of Montreal, then read a paper on The Results (after one year) of the Lorenz Reposition of Congenital Dislocation of the Hip. This was illustrated by a number of radiographs. Dr. E. R. Secord, of Brantford, Ont., contributed a paper on Operative Treatment of Spina Bifida. On the afternoon of the third day the visiting delegates were taken to the salmon canneries at New Westminster and Steveston on the Frazer River, the annual banquet being held in the evening at the Hotel Vancouver. A pleasing feature of the meeting was the very large delegation from the Maritime Provinces. The local members who formerly claimed their homes in the Provinces, down by the Atlantic, took advantage of the presence of so many of their former confrères in Vancouver, and tendered them a special address of welcome. The morning session of the fourth day, as usual, was devoted to the general business of the Association. The first item on the program was the reception of the report of the Nominating Committee. This was presented by Dr. F. J. Shepherd, of Montreal, the chairman, and on being read was adopted entire. It was as follows: Place of Meeting in 1905, Halifax, Nova Scotia. President, Dr. John Stewart, Halifax. Vice-Presidents: Prince Edward Islands, Dr. McLaren, Montague Bridge; Nova Scotia, J. B. Black, Windsor; New Brunswick, A. B. Atherton, Fredericton; Quebec, Jos. E. Dube, Montreal; Ontario, H. Meek, London; Manitoba, W. S. England, Winnipeg; North West Territories, H. C. Wilson, Edmonton; British Columbia, R. E. Walker, New Westminster. Local Secretaries: Prince Edward Islands, H. D. Johnson, Charlottetown; Nova Scotia, G. C. Jones, Halifax; New Brunswick, T. D. Walker, St. John; Quebec, J. D. Cameron, Montreal; Ontario, D. Stuart, Palmerston; Manitoba, Dr. Popham, Winnipeg; North West Territories, Dr. Hewittson, Pincher Creek; British Columbia, A. S. Monro, Vancouver. General Secretary, George Elliott, Toronto. Treasurer, H. B. Small, Ottawa. Executive Council, Dr. G. M. Campbell, Halifax; Dr. Jas. Ross, Halifax, Dr. C. D. Murray, Halifax.

The usual votes of thanks were passed and after the meeting adjourned, the Canadian Medical Protective Association held its annual meeting. The President, Dr. R. W. Powell, of Ottawa, took the chair, and read the annual report. This organization now has some three hundred members. A satisfactory report was made, and some changes were also made in the constitution. The office of treasurer was abolished and the secretary was empowered to act as treasurer and secretary. The British Columbia Medical Association also held a business meeting and elected Dr. W. D. Brydeon-Jack as President for the ensuing year and the place of meeting in 1905, Vancouver. It is generally understood that the British Medical Association will meet in Toronto in 1906, and that there will be a conjoint meeting of that and the Canadian Medical Association. Altogether the meeting at Vancouver was a pronounced success in every particular. It was the third largest meeting in the thirty-seven years' history of the Canadian Medical Association, being only surpassed by the meeting in Montreal in 1902, and the meeting which was held in London, Ontario, last year.

GENERAL.

Berlin School Children Examined.—This year, for the first time, all the children in the schools of Berlin were examined as to their health. There were fifteen thousand children and thirty-six examiners. The results were astounding. Ten per cent. of the children were found insufficiently developed in body or mind, and had to be excluded for half a year or longer; sixteen per cent. were not strong enough to attend school, owing to the debilitating effect of scarlet fever and other diseases; fifteen per cent. suffered from anemia; five per cent. had tuberculous trouble.

Compulsory Vaccination at Colon.—In order to prevent the introduction of smallpox an ordinance regarding compulsory vaccination has been passed and promulgated by the chief sanitary officer. The isthmus has been remarkably free from this disease since the epidemic which prevailed along the coast in 1903, at which time vaccination was very generally practised. In the British West Indies vaccination has long been compulsory.

Sex and Brain.—Dr. J. de Körösy, director of municipal statistics at Budapest, read a paper before the British Medical Association, giving the results of twenty-seven years of observation in the schools of Budapest regarding the relative intellectuality of the sexes. He found equality to exist in the earliest school years, followed by a gradual increase, considerably more rapid among the girls, so that at the end of the school period the results of brain tests were all in favor of the female sex. His conclusion was that the feminine intellect developed more rapidly than the masculine, but as the great work of human progress has been accomplished by males, it was fair to assume that there was an early turning point where the intellectual activity of women seemed to be arrested.

Wounds From Japanese Small-Arms.—Interesting reports have been made by Russian surgeons concerning the effects of Japanese bullets upon the soldiers of the armies of the Czar. These surgeons say that the balls from the rifles of the warriors of the Mikado are of such size, shape and weight, that they make small, clean wounds, and many of the Russians who are put out of the fighting on battlefields are speedily restored to a sound condition. It is not denied, however, that the balls are effective enough for practical purposes in crippling and disabling infantry while the clash of arms is actually in progress, and he would be cruel and pitiless, indeed, who would desire a higher death rate among the opponents of the island empire.

Diphtheria in Newark.—The Board of Health will adopt drastic measures in an effort to prevent the spread of diphtheria in Newark. There has been an increase in the number of cases in the last two weeks, and it is feared, now that the schools have opened, that a still greater number of cases may be reported. In the week ending September 3, there were 27 cases of diphtheria in the city, and in the week ending at noon, September 17 of the present year, 53 cases were recorded.

University of Vermont Buildings.—In a circular letter recently addressed to the students and friends of the Medical Department of the University of Vermont, Dr. H. C. Tinkham, dean of that department, announces that the new college building, costing $100,000, will be completed May 1 next. The classes for the coming session will be adequately accommodated in temporary quarters until then.

OBITUARY.

Dr. Henry Ridgely, president of the Farmers' Bank of Delaware, and one of the wealthiest citizens of the State, died suddenly at his home in Dover, Del., on September 17. He was ninety-seven years of age. Dr. Ridgely was graduated from St. Mary's College, Emmittsburg, Md., and received his medical education at the University of Pennsylvania. In 1856 he was a delegate to the Cincinnati convention which nominated James Buchanan for the Presidency. The Delaware Legislature appointed him to represent the State in the Peace Congress held in Washington in 1861.

Dr. John L. Gormly died at his home, No. 430 Ocean Parkway, Brooklyn, N. Y., on September 7. He was born in that section of Brooklyn, thirty years ago. He was graduated at the Long Island College Hospital and later served on the staff of St. Mary's Hospital. He belonged to the Medical Society of the County of Kings.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

Regular Stated Meeting, held Thursday, May 5, 1904.

The President, Andrew H. Smith, M.D., in the Chair.

The scientific business of the evening consisted of a discussion of the treatment of diffuse peritonitis held under the auspices of the section on surgery.

Diffuse Peritonitis.—The paper of the evening was read by Dr. Joseph A. Blake, who said that the opportunities for seeing diffuse peritonitis at Roosevelt Hospital were frequent because of the amount of emergency work, and that to surgeons in hospitals where no emergency cases came the number might seem excessive in frequency. Diffuse peritonitis he considered as a varying term for which there should be considered to be two forms of disease. One localized through spread beyond its original focus of infection. In this the spread of infectious material was limited by adhesions of the peritoneum and there was true abscess formation. In the second form this limitation did not exist, though here again, according to the time at which the affection was observed, a division must be made. In some cases all parts of the peritoneum are not involved. This was usually because sufficient time had not passed for the process to spread. In the other form of the affection all parts of the peritoneal cavity, except perhaps the smaller peritoneal cavity, were affected. Dr. Blake does not include under cases of diffuse peritonitis the merely serous peritonitis that constitutes the milder form of the infection.

Time for Operation.—With regard to the time for operation there has come a distinct change of view in recent years. The best rule now would seem to be to operate as early as possible. There is no waiting for a reaction that never comes. In this way there is much less shock because nothing can hurt the patient more than wide involvement of the peritoneum. If the affection has become limited, drainage can be made more effective. The less peritoneal surface invaded the better the prognosis. Other points of treatment have also changed in very recent years.

Present-Day Technic.—With regard to the washing out of the peritoneum, practically all are agreed on the usefulness of this procedure, but there is one important consideration. It must not occupy too much time. Delay with exposure of the intestines seriously injures their function, disturbs peristalsis and always increases the mortality. All manipulation of the intestine has this same effect. The ratio of deaths, indeed, may be said to increase regularly with the amount of exposure of the intestines and the handling they have been exposed to. It is the effect of this observation that has made meteorism much less of a bugbear than it used to be. For washing out, a hot saline solution is the best, but if it is poured in the ordinary way through a tube it increases intra-abdominal pressure and causes partial evisceration. It is often hard to get the intestines back under these circumstances. Accordingly Dr. Blake uses a large tube with an exterior outflow tube. From the character of the evacuated water it can easily be seen whether the abdominal cavity is clean. The evacuation is accomplished by means of siphonage and this serves to remove fibrin from the intestines and take away other slightly adherent material.

Drainage.—In many cases after the abdomen has been thoroughly cleaned out the peritoneum can be left to itself and no drainage is required. It must be remembered, however, that infectious material is in the abdominal cavity and that during the course of the lavage some of it may find its way over the freshly cut surfaces of the incision. This will cause suppuration. Hence, even when it is not considered advisable to use deep drainage, a drain half an inch below the surface of the peritoneum will often save the delay in convalescence incident to infections of the abdominal wound.

Postoperative Technic.—The guiding principle is to give the abdominal tissues and the gastro-intestinal tract as complete rest as possible. Hence the stomach is washed out in those cases in which there is nausea, and no food is given until the nausea disappears. If patients are weak, injections of hot saline solution are made, and if patients are very restless, morphine is employed. Where during the course of the operation the intestines are found widely distended and evidently full of gas, not passing material as they should, an opening is made in them and the contents allowed to escape, the incision being afterward closed by a purse-string suture. Dr. Blake has recently seen a trocar for the performance of enterostomy in these cases in which meteorism exists, the trocar causing after a time adhesion to the abdominal wall, but the fistula closes easily afterward.

Elevation of Bed.—If the drainage is employed from the pelvis of the patient then the head of the bed should be elevated. Undoubtedly the action of gravity favors the flow of fluid material toward the end of the tube in these cases and this mechanical factor may prove an important aid. Where the drainage tube is inserted high up in the abdominal cavity, that is above the umbilicus, the foot of the bed is raised and this manipulation has proved helpful.

Illustrative Cases.—Dr. Blake described certain of his cases in which special details seemed of interest. In one case of perforation of gastric ulcer, the patient was not operated upon until forty-eight hours after the perforation had occurred. The contents of the stomach were found in the peritoneal cavity, which was also full of pus. This patient improved after the operation, but succumbed on the fourth day. Another case of gastric ulcer, seen twelve hours after the perforation, though there was a lot of bile and stomach contents and pus, free in the peritoneal

cavity, recovered. The perforation in this case was at the pylorus and in repairing the rent the pylorus had practically to be closed. Accordingly a posterior gastro-enterostomy was made and the patient went on to uninterrupted recovery. In another case of diffuse peritonitis the peritoneum was found covered with spots of fat-necrosis. The symptoms in this case looked so serious that the abdominal cavity was not washed out after the operation. It seemed useless to do so. The patient, however, made a rapid and uninterrupted recovery.

Appendicitis and General Peritonitis.—In eleven cases of appendicitis general peritonitis was found and out of these three eventually proved fatal. The first of these was an alcoholic patient and very obese and death occurred on the eighth day. The second was a young physician who was in rather poor health. Before the operation he had been jaundiced and the case looked very unfavorable. Death took place on the sixth day. In this case the abdomen was reopened when the symptoms became bad after the period of relief afforded by the operation, but this did not give any further relief.. As a rule Dr. Blake has not seen any good from reopening the abdomen. One alcoholic patient, in whom there was widespread diffuse peritonitis, recovered in spite of double pneumonia. In cases of typhoid perforation Dr. Blake has found the use of the two-way tube for lavage especially satisfactory. With regard to drainage in these cases, as he acquires more experience, his drains become smaller. In Dr. Blake's experience, general peritonitis due to an infection from the Fallopian tube is apt to be a little more fatal in its result than that from any other source in the abdominal cavity. His own experience has shown him that there is a large balance of mortality in favor of no drainage, or only of superficial drainage.

Early Diagnosis.—Of course the most important element in the prognosis of these cases is early diagnosis, so that the cases may come for operation early. As a rule, the earlier the diagnosis and operation the less the mortality. In perforation of the stomach or of the pylorus through an ulcer, if the patients come to operation within twelve hours, there is practically no mortality. The outlook is very favorable in typhoid cases also, if the diagnosis be made early. Early removal of the appendix whenever there are threatened symptoms is also an excellent rule. Where there was perforation of the appendix with spreading peritonitis, a few years ago surgeons were satisfied to save one-third of the patients. Now it is felt to be a misfortune to lose one-third of them. Spreading peritonitis, that is, cases in which the affection has not yet reached the limits of the peritoneal cavity are seen oftener now by the surgeon, because of the improvement in diagnosis which brings them earlier into the surgeon's hands. Where the mortality used to be 60 per cent., it is now less than 20 per cent.

Conclusions.—As a result of his experience, Dr. Blake considers that an early operation is advisable in all cases of diffuse peritonitis. This operation should be done rapidly and with as little manipulation of the intestines as possible, but should be done through a rather large incision. Lavage with large quantities of normal salt solution seems to add distinctively to the favorable results in these cases. The surgeon will omit drainage wherever possible and will find it better to employ superficial drainage, that is, only just enough to protect the edges of the incision, rather than deep drainage in all cases where there has not been an extreme infection of the peritoneum, continued over a prolonged period.

Discussion of Drainage.—In opening the discussion, Dr. George Brewer said that there is no unanimity among surgeons as regards the use of drainage for diffuse peritonitis. Years ago, McBurney treated these cases by putting in a number of wicks of gauze in many directions through the peritoneal cavity. He saved many of his cases, indeed seemed to have marvelous results, yet he lost many cases also. Then came the era when drainage seemed to be the most important factor in the treatment of these cases. Large incisions were made, and even, at times, incisions on the right as well as in the appendiceal region, simply for purposes of drainage. After that came a period when some surgeons completely eviscerated the patient and wiped off every coil of intestine. It was owing to the initiative of Dr. Morris that the surgeons generally got away from this mistaken notion of exaggerated interference and returned to simpler methods. Now, the reaction has reached a point where a small incision and a small cigarette drain are considered quite sufficient. The prime factors that make for success in the treatment of general peritonitis now are considered to be rapidity of operation, little interference with the intestinal contents and a cigarette drain for the pelvis. Dr. Brewer does not consider that it is ever safe where there has been real purulent peritonitis, to close the abdomen without drainage.

Removal of Products.—Dr. Eliot said that all surgeons are now agreed on the necessity for rapid operation in these cases, but also consider that certain indications for treatment must be fulfilled. The important points are removal of the cause of peritonitis and also of any products of inflammatory reaction that may be present. This latter purpose is accomplished by lavage with the least possible disturbance of the intestine. Instead of the old method, however, of leaving the abdomen full of normal salt solution, there is a tendency now to have the abdominal cavity dry. Drainage is being made by smaller and smaller amounts of gauze and there seems a tendency to do away with even this. Dr. Eliot considers that a double incision—one intermuscular, the other in the median line just above the symphysis pubis give the patient a better chance for life. The opening in the muscles must be kept open by means of a good bit of drainage material.

Local Abscess.—Whenever nature has established a local abscess, there seems no necessity for drainage. The case has been taken care of much better than the surgeon can do it. The cavity will be obliterated and the muscles much less weakened by simple evacuation. With regard to the necessity for drainage where peritonitis is more general, a recent case illustrates its advisibility. The patient was suffering from general peritonitis and from a condition of almost complete absence of pulse, yet was restored to a good general condition by operation, lavage and drainage. Four days after the beginning of his recovery the drain was removed and there was a relapse into a very unfortunate condition. All the symptoms subsided, however, with the reinsertion of the drain. If surgeons had the facilities for knowing the nature of the germ present in certain cases of peritonitis, they would be in much better condition to judge as to the necessity for drainage. In nine out of ten cases there would seem to be very little necessity for drainage; in the tenth case, however, failure to use the drain would almost surely be fatal.

Prognosis and Appearance of Intestines.—In certain cases the intestines are distended, but still retain their glossiness, in others they have acquired a sodden look, having lost their shiny smoothness and seem to be as far removed from the lively hue of the normal intestine as can well be imagined. Whenever the sodden appearance of the intestines is noted, in Dr. Eliot's experience, there is distinctly a bad prognosis. This is true even though the patient's general condition may not seem to portend a serious result and even though there may seem to be a favorable reaction after the operation. There is evidently, in these cases, some disturbance of the important function of the peritoneal coat of the intestine by which vital resistance is kept up.

Virulent Forms of Peritonitis.—Dr. Boldt said that gonorrheal and tuberculous peritonitis are the most serious forms with which the surgeon has to deal. There is often a rapid peritonitis which develops from acute gonorrhea. The peritoneum in young, healthy persons, however, seems to have a reasonably good resistance to the gonococcus and the infection becomes walled off and they recover. The pneumococcus, when it exists in the female pelvis, is apt to be especially virulent. If the tube, for instance, affected by the pneumococcus be ruptured during operation, a fatal peritonitis is very likely to develop, if the peritoneum should become infected. With regard to tuberculosis of the peritoneum, statistics are apt to be misleading. Patients may be much improved for months, be reported cured, and then have a relapse of the condition which proves fatal. The form of tuberculous peritonitis present is important. Dry peritonitis is the most serious. On the other hand serous peritonitis, where there is considerable ascitis is the most amenable to treatment.

Gynecological Peritonitis.—Dr. Boldt said that peritonitis, from the forcing of fluid through the tube into the peritoneal cavity, during the course of douching the uterus, is usually not severe. It depends, of course, to a great extent on the irritating nature of the fluid and the possibility of there having been any infectious material in the uterus or tube, before the injection was made. Practically all that is needed for its treatment, however, is the application of cold and the securing of absolute rest. With regard to peritonitis due to foreign bodies in the peritoneal cavity much more radical and immediate treatment is needed. Usually this occurs as the result of tumor with a twisted pedicle or from a gangrenous cyst as a consequence of pressure or torsion. The rule must be in these cases to operate as soon as symptoms are serious, for delay only makes the condition worse and weakens the patient rendering the eventual outcome of operation more doubtful.

Drainage in Women.—While there may still be doubt as to the advisibility for the employment of drainage in men suffering from diffuse peritonitis there seems to be no doubt in the case of woman, that drainage should be made through Douglas's *cul de sac*. This is really a natural drainage outlet and thorough evacuation of materials within the peritoneal cavities can be secured. The material used to secure drainage, however, should not go all the way into the peritoneal cavity but should only keep the tissues just outside of it freely open. In order to assist drainage the head of the bed should be elevated and the best of results are accomplished by this simple manipulation, which of late has come to form so important a bit of technic in the treatment of peritoneal conditions.

Cellular Resistance.—Dr. Robert T. Morris said that two things must always be considered in the treatment of peritonitis. The first indication is to remove mechanically whatever is causing the peritonitis which would seem to indicate that washing and thorough cleansing of the abdominal cavity must be the rule. There is, however, a second principle of treatment that must not be lost sight of. This is that the cells of the peritoneum are perfectly capable of disposing of an immense amount of infectious material, if they are only not overloaded with it. Anything that injures these cells then must be considered as a serious disadvantage for the patient. If we were to take one of the healthiest policemen in New York and insert half a yard of gauze into his peritoneal cavity he would almost surely not be able to walk to-morrow. The result of the shock of the presence of this material would prostrate him. Therefore, in the case of an ailing patient the great care must be exercised not to subject him to such irritation unless it be absolutely necessary. It would seem, however, that lavage of the peritoneal cavity with careful precautions to keep the incision open for some time does no good. Certainly the present tendency is toward doing as little as possible that is absolutely consonant with fulfilling surgical duty. The present surgical rule might be stated: Get into the abdominal cavity as soon as possible, get out as soon as feasible and leave the patient as much as possible to himself. There are surgeons who close the abdomen without any drainage. There are, in this, however, two extremes, Scylla and Charybdis; and both must be avoided.

Immediate Closure.—For two years Dr. Morris has preferred to do, in most cases, an immediate closure of the abdomen. A large portion of these cases recover very well. Perhaps, indeed, better than by any drainage method, however well arranged. On the other hand, some of the patients develop abscesses in the abdominal wall itself, and especially in the fatty layer of it, and these abscesses are particularly difficult to treat successfully and they are apt to hang on for a long time. Sometimes it takes as long as three months for the patient to get over them entirely. In cases where immediate closure is made the patient runs a temperature for several days and the surgeon is apt to be discouraged at first. Yet the method gives good results.

Peritoneal Endothelium.—Anyone who knows the construction of the outer layer of the peritoneal covering of the intestine, with its delicate endothelial cells lying side by side and the arrangement of the openings of lymphatics between them will realize how easy it is to disturb nature's protective mechanism of absorption here. Any handling of the intestines is almost sure to disarrange these delicate cells and close the lymph channels. Hence any active drying of the intestines is certainly wrong. Even lavage under pressure would seem a doubtful procedure and anything that causes portions of the intestines to find their way outside the abdominal cavity, whence they must be forced back again, is almost sure to do the patient more harm than good.

Dr. Wyeth said that a brief operation, a small incision and a minimum of traumatism are the ideal in the modern operation upon the peritoneal cavity. His own practice is to wash the abdomen out under pressure by means of a reservoir rather high above the patient. Drainage is, however, extremely necessary. Most of his septic cases have occurred from unsatisfactory drainage. A good rule is to keep the head of the bed up and drain from the pelvis.

Dr. Walker said that success in the treatment of peritonitis depends upon the condition that is found. If the peritoneal covering of the intestine is dark and sodden without the shiny glistening appearance of life, then the prognosis is bad. Any serum that is left in the abdominal cavity is almost sure to act as a culture medium for micro-organisms. Hence the necessity for drying out the peritoneal cavity. Where there is much exudation, a large drain should be employed.

Dr. Wiggin said that a large drain only gives occasion for additional adhesions. A small drain helps the abdomen to get rid of infected, material, however. The absence of such drainage is almost sure to lead to infection of the abdominal wound. Where there is distention of the intestines from accumulation of gas, the intestines should be opened, for this gives great relief to the patient's respiration. Respirations of sixty to the minute will sometimes drop to thirty-five immediately after relief was thus afforded.

Dr. Farquhar Curtis said that when lavage was first introduced he believed in the use of a large tube and so had special Chamberlain tubes made for himself. Now he uses smaller and smaller tubes and less drainage and gets better results. Undoubtedly one feature in these better results is the smaller incision and the less traumatism inflicted. The peritoneum is perfectly capable of caring for infectious material, if it is not injured.

Long Incision.—Dr. Torek said that he has treated eight cases of diffuse peritonitis, all of which recovered, though he used the old barbarous method of a long incision, one of the incisions reaching from the ensiform to the pubis. Lavage was done very thoroughly by pouring water from pitchers directly into the widely opened abdominal cavity and the intestines are thoroughly washed off with the hand. No drainage, not even a small cigarette drain is employed after the operation and the wound is closed immediately and completely. Three cases recovered with primary reunion. Three had suppurating stitch wounds in the track of the through-and-through silk sutures which he employs. These subsided after reunion of the edges of the incision layer by layer. There was one intramural abscess and one intraperitoneal abscess, though this occurred near the umbilicus on the left side, far removed from the original focus of infection, to which, if anywhere drainage would have been thought necessary. These cases were done twenty-six to fifty-four hours after the beginning of peritonitis, though Dr. Torek considers that after forty-eight hours the prognosis is very poor.

Variations in Virulence.—Dr. Berg said that all purulent exudates are not of the same nature nor as virulent. Some cases of purulent peritonitis with intensely fetid pus all over the peritoneum will get better if the original focus of infection be removed. At times, the morning after the operation such patients will be reading the paper. Other patients that seem much less seriously affected do not improve but may even prove to be fatally affected. Hence the necessity for demanding what is purulent peritonitis. Whenever the peritoneum is shiny, its absorbent power remains. Whenever it is dark and sodden, it does not allow absorption and simply furnishes a culture medium for micro-organisms. It not infrequently happens in cases where peritonitis has been the consequence of typhoid perforation or of the perforation of a gastric ulcer that the septic material in the abdominal cavity comes in contact with the wound margins and infects them, causing serious septic or even gangrenous processes. Great care should be exercised then for the protection of the edges of the wound and drainage should be employed. Riegel showed that in animals death might be produced from the shock of injections of normal salt solution into the peritoneal cavity. Even lavage then may be contra-indicated. If the peritoneum is to be trusted, it must be trusted completely.

Dr. Blake, in closing the discussion, said that the present tendency is to use ever less and less drainage. Septic material must be removed from the abdominal cavity, especially such substances as bile and food material from the stomach, but very little manipulation must be allowed. If the peritoneum is shiny it can be depended on to take care of itself. Superficial drainage is all that is necessary in most cases.

THE OBSTETRICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, held Thursday, May 5, 1904.

The President, R. C. Norris, M.D., in the Chair.

Rupture of the Uterus, with a Critical Review of Fifty Cases from the Standpoint of Treatment.—This was the paper of Dr. W. A. Newman Dorland. He said rupture of the parturient canal at any point is an accident of labor, and more rarely of pregnancy and the puerperium, which is associated with more or less danger to the patient, either immediately from hemorrhage and shock, subsequently from sepsis and peritonitis and more remotely from its tendency to the ultimate development of prolapse of the pelvic viscera. The rupture may occur in the uterine wall from the fundus to the internal os; it may consist merely in a tear limited to the cervical tissues, or extending outward from the neck into the vaginal vaults and pelvic connective tissue; it may occur in the vaginal wall with or without the development of a pelvic hematoma; or it may take place in the perineal tissues during the delivery of the head through the vulvar ring. The most serious form is that occurring in the womb itself. This may develop spontaneously, but more frequently is traumatic in origin. It is an extremely rare accident, occurring about once in 4,000 cases of labor. During the past three years (1901-3) there have been recorded in the world's literature 49 cases of uterine rupture, the case reported in this paper completing the even half hundred. Twelve of these cases resulted fatally, giving a mortality of 24 per cent. Three of the patients died of hemorrhage or shock before any course of treatment could be instituted. Sixteen of the women were treated expectantly—that is, with uterine and vaginal tamponade and drainage—and of these four perished (a mortality of 25 per cent.) greater, as will be noticed, than the total mortality for the fifty cases. Thirty-one of the patients were treated by operation, either suturation of the uterine wall, the Porro operation, or total extirpation of the uterus, and of these cases five died. This yielded a mortality of 16$^{1}/_{31}$ per cent. The great superiority of the operative course of treatment according to the modern technic is evident from this showing.

An examination of the records as condensed in the table accompanying this paper, will throw some doubt upon the accuracy of the diagnosis in a few of the cases. The symptoms manifested might have resulted from the development of a broad ligament hematoma or other variety of puerperal hematoma. Such cases would recover naturally in most instances under the expectant course of treatment instituted. Again, of the sixteen cases treated expectantly, seven, or 43¾ per cent, showed an incomplete tear of the uterine

wall, while of the operative cases only one showed a rupture of this nature. All of these eight cases recovered. Of the nine cases of complete laceration of the uterine wall treated by tamponade and drainage, four, or 44.4 per cent., perished. It we compare this with the thirty cases of complete rupture with five deaths—a mortality of 16⅔ per cent.—the inference must be obvious.

The conclusions to be drawn from this brief study are as follows: Incomplete lacertions of the uterine wall, if the hemorrhage be moderate and the diagnosis accurate, may be well treated by careful vaginal and intra-uterine tamponade and an expectant course of treatment. Complete lacerations, the peritoneal cavity being opened should, under unfavorable circumstances, such as uncleanliness of locality and lack of surgical appliances, be temporarily treated by intra-uterine tamponade and the administration of astringents and stimulants; the patient should then, if possible, be conveyed to some hospital and the abdominal cavity opened. Under favorable circumstances the abdomen should be opened as speedily as possible and the rupture in the ulterine wall sutured in suitable cases, or a Porro operation or a total extirpation be performed, according to the nature of the case.

Dr. L. J. Hammond, in the discussion, said: It may be of interest to refer to the case which, while not under his care at the time, has become familiar to him by reason of the records having since been placed at his disposal. The woman was thirty-five years of age and was brought to the lying-in institution in active labor on the morning of July 7, 1902, with labor apparently progressing favorably according to the record, until 8 P.M. the same day, when she suddenly screamed from an acute pain in the lower abdomen and at once the woman's condition was apparent to the nurse as something out of the usual. The pulse suddenly went to 140 and was very weak and thready. At 1.30 A.M. the pulse was so weak and thready that it was impossible to count it and contractions had about ceased. The physician then undertook to deliver by forceps, and for reasons not stated in the record the forceps were abandoned and version undertaken. The woman dying, however, before delivery was completed. The autopsy made a few hours after death was confined to an examination of the abdominal contents only. This cavity was filled with large quantities of liquid and clotted blood, generally disseminated throughout the intestines. There were also firm adhesions between the abdominal viscera. The uterus was about the size of a child's head. There was a rupture of the anterior wall of the vagina which extended into and communicated with the peritoneal cavity. The cellular tissue between the bladder and uterus seemed to have been torn away, and the vesico-uterine ligament was torn and the uterine muscle laterally denuded of its peritoneal covering for some distance. This was regarded as the source of tremendous hemorrhage within the abdominal cavity. Dr. Hammond thinks this case would confirm the position taken by Dr. Dorland that operative interference is alone, and at once to be employed in cases of this kind. Personally Dr. Hammond has had no experience in dealing with ruptures of the uterus, except in partial ruptures, as seen in extra-uterine pregnancies, but concluded this from general surgical principles.

Dr. Daniel Longaker said he regretted that he did not hear all of Dr. Dorland's paper. He had seen one case of rupture of the uterus. This was about twenty-five years ago, in his very first case of labor. He had a very distinct recollection of the regularity and severity of the pain which came to a certain climax when the woman screamed violently, and accused him of having killed her. Of course, he had done nothing, beyond observing the course of an impossible labor. It was fortunate that some of his chiefs came to his assistance, or he might have fared as badly as the woman herself. She was a large Irish woman, giving birth to her ninth child. The child escaped into the abdominal cavity and the woman died four or five hours afterward, undelivered. The surroundings, of course, were very poor and miserable. Dr. Longaker was only a student, and none of those whom he called, seemed to have sufficient courage to deliver the case. The next case of rupture of the uterus which he has knowledge of, occurred in the practice of a midwife, who some years ago was in the habit of sending for him in her difficult cases. The child was already delivered when he reached the house, and the woman was in shock, suffering from hemorrhage, the placenta being undelivered. He passed his hand into the uterus, delivering the placenta, and passed it into the peritoneal cavity and grasped bowel. That patient died very promptly. The third case which Dr. Longaker saw was in an impossible labor in which several attempts had been made to secure delivery by forceps, the child's head being arrested above the brim. The woman was giving birth to her first child. He found her in profound shock, pulseless and with an exsanguine look. The uterus was ruptured from the vaginal juncture and well up into the body. The fetus had not escaped entirely from the cavity. Delivery was made on a dying woman. He has not seen rupture of the uterus in any case where version was either made or unsuccessfully attempted. He shall probably have a little more to say on this subject in his paper.

Dr. Stricker Coles said: In a case in which he had been asked to repair the lacerations, on making an examination he found the intestines were in the opening. A douche of bichloride had been given the night before. He found more than ordinary abdominal distention and the woman was in a bad condition. After finding a rupture in the peritoneal cavity, he hardly knew what to do. She would not stand being removed to a hospital. He therefore put in a glass drainage tube and washed out the wound with salt solution, but the woman perished soon afterward. The next case was a multiparous patient in her fifth pregnancy. It was a case of hydrocephalus. There was breech presentation and the head was impacted. The case was delivered with great difficulty and craniotomy had to be done on the aftercoming head. Making an examination for lacerations, he found a tear in the peritoneal cavity. The patient had just been up for four or five days from a bad case of typhoid fever. The result of the laceration was so severe that in her weak condition she perished soon after delivery. In both of these cases abdominal section might have saved them if they had been seen earlier.

Dr. L. J. Hammond said he would like to add a part of the history of the case not at first referred to, which is important. The first labor was a very difficult one necessitating instrumental delivery, then followed this labor and extensive bilateral laceration. The second pregnancy she aborted at the fifth month, and following this abortion there was a very protracted recovery, due, from the history of the case, to the presence of extensive peritonitis. He mentions this because Dr. Dorland has said that many cases show cicatricial conditions of the uterus to have previously existed. As a matter of fact, the cicatrices from these lacerations were not at the point of rupture, it being, as before stated, along the anterior wall or roof of the canal and seemed to bear no relation to this weakened area.

Dr. George M. Boyd said he did not hear all of the paper, but the review of the fifty cases is, he thinks, of a great deal of interest, particularly because of the rarity of rupture of the uterus. It has been his good fortune never to have seen a case of so-called complete spontaneous rupture of the uterus. He has had a number of cases of incomplete rupture, particularly of the lower segment extending into the broad ligament, and he remembers one case of traumatic tear through the fundus from the use of placental forceps. Incomplete rupture of the uterus is probably more frequent than one realizes. It seemed to him that with the symptoms of hemorrhage the course to follow would be to make a careful exploration of the uterus, and determine whether the tear is complete or incomplete. If it is complete immediate section and repair of the injury should be done by laparotomy. If the tear is not complete, it should be treated by tamponing the uterus. Some operators fear rupture of the uterus after celiohysterectomy. In the cases he has seen there seemed to be no tendency to rupture in second pregnancies.

Dr. Dorland, in closing, said he would like to thank the gentlemen for the most interesting discussion given to his paper. In the table accompanying the paper which he had read, a study of the clinical features of the cases reported shows some very interesting points, some of which have been touched upon in the discussion. For instance, the frequency of multiparity in this accident is well shown. In the 50 cases reported there were 24 of the women who were in their fourth pregnancy or over, one being in her twelfth gestation. Thus, almost half of the cases showed advanced multiparity, and this may have had something to do with the development of the rupture. In the record of the cases reported in the discussion he noticed that nearly all—if not all—occurred in private practice, and almost all resulted fatally. The statistics reported by Schmidt and others, come largely from hospitals, and Dr. Dorland firmly believes that if the obstetrician were to collect a similar series of cases, all occurring in private practice, the mortality would be almost absolute. Another feature noted in his table is the large percentage of pathological obstetric conditions, such as hydrocephalus and breech presentations, and cases associated with degenerated muscle-tissues, which was probably the condition in the case mentioned by Dr. Coles. Again, the frequency of incomplete rupture must be much beyond the actual showing of records. He recalls reading somewhere the statement made by some abdominal surgeon that interstitial pregnancy existed much more frequently than now thought, and that it no doubt ruptured frequently into the uterine cavity, giving the symptoms only of an abortion without any indication of the occurence of an incomplete uterine rupture, which, in reality, does exist.

Version in Delayed or Obstructed Labor.—Dr. Daniel Longaker read this paper. By the exercise of great care, under complete etherization version is usually feasible in transverse presentations even though ergot had been given and an arm has been prolapsed for some time. Celiohysterectomy is, however, indicated in the presence of actual or impending rupture of the uterus. Version is of special value in cases of incipient transverse presentation. Should all expedients fail to secure engagement and descent of the head, and speedy, natural or instrumental termination of the case, which has often dragged along many hours beyond the normal duration, version is often capable of yielding brilliant results. In cases of simple flat pelvis, with direct conjugate not under 7.5 cm. or 8 cm. version is indicated, if the conditions for successful employment of the forceps be lacking. It is not a rival of the forceps at all, but it finds its legitimate place as a supplementary measure in the treatment of relative pelvic contraction. An earnest protest is made against the routine use of the forceps. Such practice leads to bad results to both mother and child. Where the head is arrested above the brim application of the forceps is a procedure of questionable expediency, quite difficult in the absence of relative contraction, while in its presence, it had better not be undertaken. A strong plea is made for the accurate determination of the relation of the fetus to the pelvic canal by inspection and palpation—external examination. Estimating the location, size and compressibility of the head from the outside and above the pelvic brim rather than from below and within, exclusively, as is the too uniform rule. This rigid plan of examination must antedate labor, especially in primiparæ, for six or eight weeks, if uniformly satisfactory results would be attained.

Dr. R. C. Norris, in the discussion, said many of the profession remember reading the former earnest discussions on this subject by Goodell and Ellwood Wilson in this hall. This Society now comprises a new generation of obstetricians, and for one's own satisfaction one must thrash out this subject. It is one full of interest, and Dr. Norris trusts it will have a generous discussion. The Society shall be glad to hear from those present who have clear-cut ideas to express or experiences of this type of case to relate.

Dr. Oliver Hopkinson said: In treating these so-called border-line cases one encounters many difficulties. He thinks the profession should be guided by the position of the head. If a floating head, version is the easier operation of the two and more safe for the mother. If impacted or partly engaged, he would make an attempt at forceps delivery first. He was very much interested in Dr. Longaker's reference to his case of impacted transverse presentation. With the child lying transversely, with the shoulder or arm impacted, it is almost impossible to get the hand around and grasp the foot, but gently working the hand around and grasping the pelvis, and pushing up the head, the obstetrician will succeed in getting the pelvis of the child at the superior strait. Dr. Norris remembers one case he saw in consultation, in which the membranes had drained for a number of hours. The man had attempted to do version, and was unable to reach a foot. The back was anterior, as it usually is in these cases, and it was rather easy for him to pull down the pelvis of the child. He did what might be called pelvic version instead of podalic version. Dr. Norris feels that further attempting to do a podalic version might have ruptured the uterus.

Dr. Stricker Coles said he thought the treatment of these cases in which the arm is prolapsed and the back anterior were not very difficult. In nine cases reported he had little difficulty, because the back can be made to revolve along the anterior abdominal wall and the breech can easily be brought down. If the back is behind and impacted under the promontory of the sacrum, to do version you must shove the entire child up. Attempts at version in such a case is a great mistake, and one is almost sure to rupture the uterus. When the arm has been outside for some time, and is gangrenous, there is only one thing to do—to amputate. After that is done the best thing to do is to decapitate, or decapitate before and deliver the child without any attempt at replacement or version. Dr. Coles said he had very distinct ideas in which cases he would employ version and in which forceps. If he can get the head to engage, he noted carefully the amount of difference

there is between the child's head and the mother's pelvis. If he can put the mother in Walcher's position, and bring the head to engage, he uses the forceps; but, if he cannot get the head to engage, and as he pushes it down he can feel it resting over the promontory of the sacrum on one side, and the symphysis on the other, showing that the head is larger than the pelvis, he would be careful. If there is a slight difference, version is the operation to be done. When you find a large disproportion, Cæsarean section, symphyseotomy, or some other form of operation, should be done. You must measure the pelvis, and estimate the size of the head. He tries to estimate this by fitting the child's head to the mother's pelvis, and on his results in this he bases his treatment. If he can make the head engage, he feels that there is very little difference, and he uses the forceps. Version is a splendid operation, but should not be employed too generally in contracted pelvis, without carefully studying the case.

Dr. George M. Boyd said it is timely that the subject of version was discussed, and particularly version in contracted pelvis. It must be remembered, however, that the profession has made considerable progress in the last decade or two, and that other operative interference has come to our aid. In the days of those celebrated teachers, symphyseotomy and Cæsarean section were not so much considered. He would employ version for transverse presentation, and occasionally, for flat pelvis; but he would consider it a makeshift operation in contracted pelvis. It must be remembered that a fetal mortality of 30 per cent. in breech presentation is on record. Failing with forceps in a generally contracted pelvis, it seemed to him it is better to do craniotomy than to turn, particularly if the forceps had been used faithfully.

Dr. J. S. Raudenbush said that last fall, in a primiparous case, twenty-five years of age, the internal conjugate normal, external conjugate 20.25 cm., the woman started into labor in the morning, and had strong, vigorous pains. She had always been a strong, healthy woman. The head would not flex sufficiently to pass down in the pelvic canal. Between 10 and 11 at night the membranes ruptured, but the head remained in the same position. The anterior fontanelle stayed entirely too low, and he decided that the condition demanded the application of the forceps. These, however, failed and he saw that he could not complete flexion so that the head could come down as it should. The membranes had been ruptured for two hours, and he did not know whether he might not succeed in version, since he could not produce complete flexion. He succeeded in getting the head up out of the pelvis and had sufficient liquor amnii to do version and he delivered a living child. A week later he attended a multiparous woman, a sister of the former patient, and found the head in exactly the same position. Within an hour complete flexion commenced to come on, and there was a normal delivery within three hours of his arrival. The next case occurred within a month in a primiparous woman about twenty-two years of age. Her measurements were practically normal. The external conjugate was 21 cm. and he anticipated no trouble. The woman was a neurotic case, the pains were weak. There was a left occipito-anterior presentation, but the head would not come down. He applied the Simpson forceps and afterward the Tarnier and delivered the child, but it was born dead. He has since regretted that he did not do version two hours earlier when the head was high in the pelvis and the membranes unruptured. About three weeks ago, at the Medico-Chirurgical Hospital, a colored woman with diminished measurements of the pelvis fell in labor. Later in the day the conditions were about the same, there was but little dilatation and the head was in about the same position. He waited until after six o'clock, when he made another examination, having determined upon version; but by that time the head had commenced to flex completely. It was a left occipito-anterior position and there was a beginning of cervical dilatation. He left the case in the hands of the resident. At about 10 o'clock in the evening the case was normally delivered. This case shows that even with diminished measurements neither forceps nor version were necessary.

Dr. R. C. Norris said he had listened with great deal of interest to this discussion, and he thinks it may be taken for granted that in the lesser degrees of pelvic contraction, the mortality for the child is greater following version than the skilful application of the forceps. On the other hand, version is much easier to do than a skilful forceps operation, so that he believes for the man of average obstetric experience, version is the better operation for him to perform. A man with wide experience with axis traction forceps becomes very skilful in their use and will save more babies if he resorts to the forceps. The rapid extraction of an infant's head through a moderately contracted pelvis after version means a sudden compression of the child's head which, in his experience and so far as his reading goes, is more dangerous to the child than the gradual compression as applied with the forceps. In other words, the baby, as it passes through the birth canal head first, has its head gradually moulded and compressed in every step of the labor. He recollects the advice given him many years ago by Dr. Godell, that in cases with a moderate degree of contraction, when the use of the forceps had been decided upon, the operator should not be in too great haste to extract the child through the pelvis. Dr. Norris has learned the value of that in his practice he says. He has put on the Tarnier forceps and made traction and secured some advance of the head. He has taken them off, gone to his room and slept for half an hour, having the nurse call him, when he would put the forceps on again and get a little further advance of the head, to be again followed by removal of the forceps. In this way he feels that he has saved more babies with the forceps than would be possible by version. A practical point is the determination, as Dr. Boyd has said, when it is or is not justifiable to use forceps or version. That is one of the most difficult problems for even the expert obstetrician. The question depends more upon an individual's specially trained knowledge and experience than any other problem of obstetrics. His practice leans toward the least aggressive means of treating these cases, although he takes as much pleasure as any one in doing Cæsarean section. He can only refer to his work at the Preston Retreat. He is preparing a paper embracing some twenty-five cases of induced labor for minor degrees of pelvic contraction. In one of these cases he anticipated especial difficulty and grave risk for the child from induced labor. The woman was therefore allowed to go to term and was prepared for Cæsarean section, but was treated as if she were a private patient in her own home. She was allowed to go into active labor to test Nature's efforts and delivered herself spontaneously, thus saving the Retreat the record of never having had a Cæsarean section in two thousand labor cases. He believes the selection of treatment is a matter of individual opinion and experience, and he thinks the determination of when to employ forceps, when to do version, or when Cæsarean section must be done is one of the most per-

plexing problems in obstetrics to-day. The method to aid such a choice he has found most satisfactory is, after a few hours of actual bearing-down pains, to study the distance between the promontory of the sacrum and the sagittal suture, as the head lies transverse in the pelvis. The degree of lateral flexion and the distance between the sagittal suture and the promontory indicate fairly well the relative disproportion between head and pelvis. A distance of two or more centimeters favors the use of the forceps. This has guided him sufficiently to avoid doing Cæsarean section on several occasions. The woman must be examined under ether. He agrees with Dr. Boyd, that if forceps are used first and they fail and version follows, few babies would be delivered alive. The physician should make up his mind before he starts to operate which he must do, and then proceed. If he finds that he has made an error of judgment and cannot without undue violence get the head well engaged in the pelvis, he should either turn the case over to someone else; or, if he is a skilled abdominal operator, he should open the abdomen.

He confesses that when he learned the records of pelvic deformity managed by the average practitioner and sees how frequently disastrous instrumental deliveries occur, he believes that forceps are resorted to prematurely and in a violent manner. If moulding and adaptation of the head were permitted to occur or were carefully obtained by gradual compression and traction with axis-traction forceps there would be less injury to the child than is likely to follow rapid extraction after version.

Dr. Longaker, in closing the discussion, said he wanted to thank the gentlemen for participating in this discussion. It is a large and interesting question and one which cannot by any means be exhausted in a single paper. He thinks nothing has been said with which he disagrees. He certainly agrees most fully with the opinion that after an attempt at forceps with failure, resort to version is improper. He does not remember ever having been guilty of such poor judgment. As said in his paper, it seems to him that these two operations can hardly be called rivals. Where the indications for a successful forceps delivery exist, there the indications for a version do not exist, and the converse of this statement is just as true. He would say to Dr. Hopkinson in regard to doing a breech version that he thinks in these cases he has accomplished a great deal with the hand outside. You can pass the hand well down into the flank toward the back and as the uterus has adapted itself so nicely to the fetal outline, you can locate the leg and push it down from the outside so that the deep introduction of the hand into the uterus is not necessary.

In regard to cases alluded to by Dr. Coles, in which there was present a condition of putridity, it is, of course, good practice not to return such an arm. The question of doing hysterectomy would come up in a case so long neglected, and in which there would certainly be infection. In the case in which an arm had been prolapsed for twelve hours, he expected to find such firm impaction that version would be impossible and went prepared to do embryotomy. It is a simple thing to imitate that which occurs under the natural forces of labor—spontaneous involution. It would not be a difficult thing to open the thorax, eviscerate the child and allow it to double up in the pelvis and thus simulate the process of spontaneous evolution. He agrees with Dr. Boyd in the inadvisability of resorting to version after the forceps have been employed. In regard to Tarnier's forceps, he is in the habit of using it in high application, but is not enthusiastic about the results where there is any decided degree of contraction to be overcome. He agrees most thoroughly with the views of the President regarding the expediency of inducing premature labor. He has had several cases during the past winter, in which the results have been all that one could desire. The last case was an obliquely contracted pelvis due to coxalgia in childhood. The woman fell into his hands in her first pregnancy and the degree of contraction was estimated. She accepted the advice to have labor induced in the thirty-second week, and gave birth to a fine infant weighing a little under seven pounds and the child continues to be a perfect specimen. In her second labor a few months ago the same plan was followed and delivery was remarkably easy. The induction of labor in the second case was the easiest thing possible. The woman received a number of douches by way of preparation, and at about four o'clock in the afternoon Dr. Longaker began the active procedure of the induction of labor, consisting in the introduction of a small McLean bag. Both sides were dilated at once and in about half an hour she expelled the bag, and before the nurse could call the Resident, four hours later, the baby was born and has done well. There is no question as to the advisability of this operation.

BRITISH MEDICAL ASSOCIATION.

Seventy-second Annual Meeting, held at Oxford, England, July 26, 27, 28 and 29, 1904.

(Continued from Page 569.)

Section on Tropical Medicine.

Human Trypanosomiasis and its Relation to Congo Sleeping Sickness.—Drs. Christy, Dutton and Todd gave a report of the Liverpool School of Tropical Medicine. The expedition arrived at Leopoldville on November 21, 1903. Two of its members who had made a short tour through the cataract region arrived a week later. During their journey through this district, in which Congo sleeping sickness was said to be extremely prevalent, many cases, with very anomalous symptoms, but called sleeping sickness, were seen. As already stated in a first progress report, trypanosomes were found in the peripheral blood of some of these cases. It therefore became necessary to commence a clinical study of human trypanosomiasis in order to see what relation it bore to Congo sleeping sickness. Leopoldville offered particular advantages for such a study, and the members of the expedition decided to remain there for a few months. A large bungalow was placed at their disposal by the Congo Government, and, through the kindness of Dr. Grenade, the State Medical Officer, and Dr. Broden, Director of the Leopoldville Bacteriological Institute, the patients at the native hospital, a good proportion of whom were infected with trypanosomes, were given to the expedition to study. In addition to this, the presence of about 2,000 State employees—laborers, soldiers, etc.—afforded an easily-accessible healthy native population. Later, the hospital for natives was found unsuited for a complete examination of the cases, and a new structure was built, and supplied with the necessary appurtenances through the kindness of the local government. The members of the expedition have therefore for four months been in a position to keep patients under continued and careful observation. Out of a total of 465 natives, coming from all parts of the Upper Congo, as well as the districts round Leopoldville, where they were examined, 54 were found to have trypanosomes in their blood, and out of 707 examined at Boma, Matadi,

and in the Cataract Region of the Lower Congo, 49 were found to be infected with them.

In the British Colony of the Gambia only six cases of human trypanosomiasis were found among 1,043 natives. These Gambia cases presented no definite symptoms of illness, and nothing abnormal was detected, with the possible exception of an occasional rise in temperature and increase of pulse frequency. In the Congo we have also seen examples of the mild Gambian type, but the majority of our cases have shown marked symptoms of illness. From a close study of the Congo cases, it becomes evident to us that there is no well-defined line of demarcation between these two forms of the disease, though, for descriptive purposes, we here propose to consider them under three main headings, A, B, and C.

Type A. Cases with no definite symptoms of illness.

Type B. Cases with few symptoms.

Type C. Fatal cases showing well marked symptoms, the most notable being fever, lassitude, weakness and wasting.

It is significant to note that a large percentage—36 out of 44—of those classes under types B and C were believed by their friends to be suffering from "sleeping sickness."

We have seen cases coming under type C, in which no sleep symptoms were ever present, as well as cases in which some of the classical symptoms of sleeping sickness were noted. We therefore subdivide type C into: 1. Fatal cases showing no sleep symptoms. 2. Fatal cases showing sleep symptoms.

Here again no sharp division is possible between these two groups, still, we think it not inadvisable to separate them, since from our experience here, we believe that altogether too much prominence, as a diagnostic feature, has been given to what appears to us to be only a minor and inconstant feature of this disease, namely, sleep. The prominence given to this system has tended to disguise the true nature of Congo sickness which is, primarily at least, a trypanosome infection.

Trypanosoma Gambiense as Cause of Congo (Sleeping) Sickness.—(*a*) As already indicated, in nearly every case in which sleeping sickness was diagnosed or suspected, trypanosomes have been found in either blood, cerebrospinal fluid or both. (*b*) We have shown that there is a very evident clinical connection between those cases which have only very light symptoms (trypanosoma fever) and the advanced cases of "sleeping sickness" seen in hospital. (*c*) In Gambia there is an undoubted trypanosoma disease in horses which is characterized, in its first stage, by the absence of obvious symptoms; and later by fever, emaciation and weakness. The course of this disease may be chronic and death delayed for a long period. (*d*) The sleeping sickness of the Congo is known to have a long latent period. Symptoms are said to have been developed in some cases two to five years after having left an infected locality. It is interesting to note that natives may be infected with trypanosomes for many months without showing signs of illness. (*e*) Europeans infected with *Trypanosoma gambiense* show symptoms which are quite comparable to those observed in uncomplicated trypanosome infections of Congo natives. (*f*) In Gambia, where cases of sleeping sickness are rarely seen (Dr. R. M. Forde, Principal Medical Officer of Bathurst, stated that perhaps one case a year came under his care), only six out of 1,000 odd natives were found to be infected, by the examination of fresh cover-slip preparations. In an almost exactly equal number of a similar class of natives examined in the same way in the Congo, 46 have been infected. In Uganda, where the disease occurred in epidemic form, the percentage of infection among the general population was still higher. *Duration.*—It has been impossible to decide for how long a period a native may be infected with trypanosomes and still show no definite signs of disease. One man already mentioned is known to have been infected for over a year and is still perfectly well. It would appear from one or two early cases which have been observed that the transition from this "latent" stage to one in which symptoms are noticed may be very gradual. We have only observed eight fatal cases of Congo sickness in which the necropsies showed no obvious secondary infection. The duration of the disease dating from the recognition, either by the friends of the patient or by ourselves, of obvious signs of ill-health, has been two to four months. *Recovery.*—In our experience no native who has shown definite and constant signs of ill-health has recovered. The trypanosomes were found by Dr. Broden on February 7, 1903, during an attack of fever which lasted for a few days. During the last year Dr. Broden has seen no parasites in the blood.

Death.—We do not think that we have sufficient evidence to state that death is produced by the trypanosomes alone. Secondary bacterial infections seem to determine the fatal issue of many cases of Congo sleeping sickness. Thirteen out of twenty-two necropsies performed at Leopoldville showed complications or obvious secondary infections. They were as follows: Purulent meningitis, 4; purulent pleurisy and pneumonia, 1; pneumonia and localized tubercle of lung, 1; localized gangrene of lung, 1; enlarged caseating and breaking down glands in thorax and abdomen. No tuberculosis lesions in organs. (Tubercle bacillus in glands seen in one case), 2; dysenteric ulceration of large bowel (perforation in one case), 2; universal adherent pericardium (recent), 1; infiltration of pus in femoral, inguinal, and intestinal iliac glands (gonorrhea), 1. According to the post-mortem reports of Colonel D. Bruce and Dr. Nabarro very similar lesions were observed in Uganda, where 10 out of 20 necropsies on sleeping sickness patients showed obvious secondary infections, and in three instances purulent meningitis. It will be noted that purulent meningitis has been the most frequent complication both in Uganda and in the Congo. The brain in these cases presents a very abnormal appearance. The convolutions, especially on the upper surface, are covered and glued together by a thick layer of tenacious lymph, and the vessels of the pia arachnoid are intensely congested.

It is evident that such morbid changes are explicable on bacteriological grounds, and we have found microscopically in all such cases an almost pure culture of a diplococcus occurring in small chains. These observations make us doubt whether the acute congestion of cerebral vessels, accompanied by an increase of pia arachnoid fluid containing pus cells, seen by us here, and described by others, as typical of sleeping sickness can be attributed except indirectly to the trypanosome. The Portuguese Sleeping Sickness Commission, Dr. Broden in Leopoldville, and Dr. Castellani in Uganda, have all described bacterial infections in a very large percentage of sleeping sickness cases examined before as well as after death. It must be noted that such purulent changes have not been described in animals dying from trypanosome infections.

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[EXCERPT FROM 1902 REPORT]

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Periodicity and Frequency of Occurrence in the Peripheral Blood.—Frequent examinations of the finger blood of trypanosome cases has shown that the parasites may, to the ordinary methods of examination, be absent from the peripheral blood for varying periods. The frequency with which the parasite is obviously present in the peripheral blood bears no relation to the severity of the symptoms.

Number of Parasites Appearing in the Blood.—The number of parasites seen in ordinary fresh cover-slip preparations is generally small, but in some patients very large numbers have been recorded. In two cases a large increase has occurred during the few days immediately preceding death.

Symptoms Associated with Parasites in Blood.—From our observations we cannot make out any definite relation between the temperature and pulse and the appearance of the parasites in the peripheral circulation. A rise of temperature is not necessarily associated with an increase of parasites in the blood. It appears, therefore, that the number or constant presence of the parasites in the peripheral blood bears no relation to the severity of the disease. As a rule, we have found that the parasites occur in extremely scanty numbers in the cerebrospinal fluid, seldom more than 1 to 3 or 4, very occasionally from 10 to 20 to the cover-glass preparation of the sediment left after centrifuging. As already stated, neither at Leopoldville nor anywhere on the Lower Congo, up to the present time have we met with a case of Congo sickness in which sleep has had a prominent place among the clinical symptoms, and in those few cases in which it has been noted a few days before death, or at irregular intervals during the course of the disease, it has not been describable as a deep or continuous sleep, but merely a drowsy or somnolent condition from which the patient was at once aroused by being touched, or perhaps, by being spoken to. On comparing the cases in which parasites were found in the cerebrospinal fluid with those in which they were not found, we see that most of the few cases in which drowsiness was a feature, together with cases in which head symptoms, for example, mild mania, epileptic attacks, flexeur contractions, and convulsive seizures were conspicuous are upon the plus side. On the minus side similar cases are also found, but it is noticeable that there are many of those cases which showed hardly any symptoms, and which, if no fatal complications intervened, lived on month after month in an advanced state of emaciation, retaining their faculties, speech and appetite, etc., almost to the moment of their death. It is therefore not improbable that the presence of the parasites in the cerebrospinal fluid at a late stage in the disease may tend to increase the gravity of the case by predisposing to one or other of many complications, or in other ways hasten a fatal termination; but that this is not invariably so is proved by at least two of our cases, one of whom is the most sturdy patient under observation. No animals inoculated with material in which trypanosomes were seen taken post mortem from cases of trypanosomiasis have ever become infected. Parasites have been seen in the peripheral blood of infected animals only at more or less irregular intervals. Guinea-pigs have perhaps shown themselves the most satisfactory of ordinary laboratory animals, since, as a rule, when once infected parasites are constantly present in large numbers. Death, in the small number of our infected animals which have died, can in no instance be certainly said to have been due to the trypanosome alone. These are all points in which the Congo trypanosome resembles *Trypanosoma gambiense*. In addition, the "incubation period," that is the period intervening between the inoculation of small or medium doses of infective material, and the detection of the parasite in the peripheral blood of the experimental animals, is much the same for both parasites.

	Congo Trypanosome.	Trypanosoma Gambiense.
Rats	5 to 20	7 to 20
Mice	5 to 16	6 to 7
Rabbits	17 to 27	21
Guinea-pigs	11 to 25	12 to 21

Monkeys of two different varieties, both belonging to the subfamily *Cercopithecus*, have been infected. Only one has shown slight symptoms of ill health. On two occasions a slight rise in temperature and loss of vivacity has accompanied one of the irregularly appearing intervals during which parasites have been seen in the peripheral blood. This monkey has been infected for nearly three months. We have again failed, even with large doses of blood containing huge numbers of trypanosomes, to infect two dog-faced monkeys (*Cynocephalus*).

Transmission Experiments.—We have attempted to repeat the transmission experiments made by Bruce, in Uganda, with the tsetse fly. These flies are rather numerous in the bush along the river banks on either side of Leopoldville, and a fair number are daily brought to the laboratory by a gang of boys supplied for the purpose by the local authorities. Practically all the flies brought in by them have been *Glossina palpalis* (native name, "mavekwa"). Two specimens of *Glossina fusca* have been brought in during the past four months. Unfortunately we have had the greatest difficulty in obtaining monkeys, and have only been able to use two for these experiments. Both in the Congo and in the Gambia experiments have shown that the guinea-pig is, perhaps, the laboratory animal most susceptible to *Trypanosoma gambiense*. We therefore determined to employ it, lacking monkeys, in our transmission experiments. At the time of writing both experiments with monkeys remain unsuccessful, and only one, a direct transmission experiment with guinea-pigs, in which the flies were made to feed alternatively on an infected and an uninfected animal, has given a positive result.

Cerebrospinal Fluid in Sleeping Sickness (Trypanosomiasis): 104 Lumbar Punctures.—Cuthbert Christy, in his report on this section of the topic writes: The majority of the punctures recorded in the accompanying tables were performed whilst working with Drs. J. E. Dutton and J. L. Todd in the Congo Free State. All, with the exception of three, were performed by myself, either at Boma, Leopoldville, posts further up the Congo, or since returning to England. Some conclusions drawn from a number of them are published in our last conjoint report. Out of a total of sixty-four natives operated upon, the fifty-four in Table I were proved to be cases of sleeping sickness by the discovery of trypanosomes in the blood or cerebrospinal fluid, or in hydrocele fluid, while in the remaining ten in Table II parasites were never found, although the majority of them were more or less suspicious cases, and all were in hospital at Leopoldville. In thirty-four of the fifty-four sleeping sickness cases the parasites were found sooner or later in the cerebro-

spinal fluid, whereas in twenty of them no parasites could be found, although in one case (17) the fluid was examined on five occasions.

The total number of cases here recorded is too few to permit of any very definite statements, but I think it is sufficient to allow of the following provisional conclusions: (1) That in many cases the trypanosomes never find their way into the cerebrospinal fluid, and in those cases in which they do they are more frequently to be found toward the termination of the disease. (2)That the commencement of the fever or other symptoms is in no way correlated to the entrance of the parasites to the cerebrospinal fluid. (3) That a large number of trypanosomes in the cerebrospinal fluid is rare, but when it does occur there is usually an access of temperature. (4) That the parasites may come and go in the cerebrospinal fluid as in the blood. (5) That enormous numbers may appear in the blood without appearing in the cerebrospinal fluid, and, to some extent, vice versa. (6) That when trypanosomes are present in the cerebrospinal fluid its white cell elements are apt to be increased. (7) That in cases where the parasites gain access to the cerebrospinal fluid early in the disease, mania and other head symptoms are more likely to be prominent.

David Nunes Nabarro, working with Colonel Bruce in Uganda on the Royal Society Commission and of assisting with the joint report on sleeping sickness published by the Royal Society, agreed with many of the propositions enunciated by Colonel Bruce.

Sir Patrick Manson said: If Colonel Bruce's contention is proved, the fact that *Trypanosoma gambiense* is the cause of sleeping sickness is a matter of the highest importance; but if, on the other hand, it be not fully proved, to accept it as such, and to found on the supposition expensive prophylactic measures, would be a serious false move. Colonel Bruce's evidence is principally epidemiological not pathological. In none of his experimental animals did he produce the pathognomonic small-cell infiltration of the perivascular spaces of the brain, nor, so far as I know, have other experimenters been more successful. His epidemiological facts apply only to a very limited region, and it may well be, as with its predecessor *filaria perstans*, that the distribution of the trypanosoma will not correspond with that of sleeping sickness. Indeed, quite recently it has been stated that in the German territory at the south end of the Victoria Nyanza the entire population is infected with trypanosomes, but sleeping sickness is unknown there. If this be true, then the trypanosoma cannot be the only cause, or even a cause, of sleeping sickness. Recent work seems to indicate that the trypanosoma is an element in the causation, but that the determinating cause of the pathogenic condition causing the symptoms of sleeping sickness is bacterial, that is to say, that a combination of Castellani's first and last etiological views is the correct one. Colonel Bruce states that trypanosoma infection is always fatal. I know of one case which three years ago had all the clinical symptoms of trypanosomiasis, and in whose blood Dr. Broden, of Leopoldville, found the trypanosoma, who is now quite well, in fact, in better health than she ever has been for years. Apparently she has overcome the infection.

Dr. Sambon remarked that he could not altogether agree with the statement that the tsetse fly (*Glossina palpalis* was merely a mechanical agent in the transmission of trypanosomiasis, and, therefore, that all stages of development of the parasite takes place in the human body. The tsetse fly no doubt serves as an intermediate host. If the function of this fly is merely mechanical, why do not other biting flies, such as the *Tabanus* and *Stomoxys*, which are also prevalent in the sleeping-sickness areas, also help to transmit infection?

(To be Continued.)

AMERICAN CLIMATOLOGICAL ASSOCIATION.

Twenty-first Annual Meeting, held at Philadelphia, June 2, 3 and 4, 1904.

The President, J. C. Wilson, M.D., of Philadelphia, in the Chair.

Presidential Address.—Dr. Wilson referred to the early history of climatology in this country and sketched the character of Benjamin Rush, saying that he was the first great American physician to enter upon the study of this branch of medicine, and referring to his "Inquiry into the Natural History of Medicine Among the Indians of North America, with a comparative view of their diseases and remedies with those of Civilized Nations." This essay was delivered when Rush was only twenty-nine years of age, and has been regarded as a sort of American classic, embodying at once most important points concerning the red man of that day, and valuable conclusions concerning the value of fresh air, cold water and exercise in health and disease. Dr. Wilson also referred to the part Philadelphia is taking in measures relating to the study, prevention and treatment of pulmonary tuberculosis and to the fact that the transactions of the Climatological Association constitute a valuable record of this moment throughout the country.

Climatology as a Study in the Medical Schools.—This was the title of the paper read by Dr. S. E. Solly, of Colorado Springs. He took pains to ascertain to what extent climatology was included in the regular curriculum. Seven colleges stated that it was included, others stated that there was no regular instruction, but that the different professors, sometimes the professor of medicine and sometimes the professor of therapeutics, referred to the matter of climate in connection with the various diseases discussed. While Dr. Solly recognized the value of Dr. Burney Yeo's dictum that "care without climate is better than climate without care." He urged that we must combat the belief that is now being so much advocated in connection with the open-air treatment of tuberculosis, which is that it is the quantity of the air that is valuable, the quality of the air counting for nothing.

Dr. Carroll E. Edson, of Denver, in discussing Dr. Solly's address, said that medical students and, in fact, most general practitioners do not know how to read weather statistics. The elementary principles—the foundations on which therapeutic application must rest are the fundamental principles of meteorology. The time should be spent upon those preliminaries, or the student directed where he could learn those details in some simple text-book, and time thus spent would go far to help him to read correctly meteorological statistics which are at the foundation of description of relative climates; and it would help especially to keep him from reading or to discount the atrocious falsehoods that are put into hotel, railroad or even into some medical publications concerning health resorts. Dr. Guy Hinsdale, of Hot

Springs, Va., in the discussion said that Dr. Wm. Pepper, who was the Provost of the University of Pennsylvania and one of the Presidents of this Association, was one of the first to realize the importance of teaching climatology in the medical schools. About ten or twelve years ago the speaker was appointed the lecturer on medical climatology in what is known as the Spring Course, or the auxiliary course of medicine in the University of Pennsylvania. For a number of years an elective course of ten lectures was given, beginning with two to three lectures on the general principles of meteorology; and the balance was devoted to the general considerations of climate, with reference, toward the end, to certain health resorts, mineral springs, and so on, in this country. At present there are no lectures delivered in the medical school of the University of Pennsylvania on climatology.

Climate of Santa Barbara, California.—Dr. William H. Flint read a paper on this subject. It was accompanied by tables of temperature, rainfall, relative humidity and wind movement for the past twenty-five years. Dr. Flint said that high fogs occur frequently from May until October, but are comparatively rare during the other months of the year. Being high they do not cause the deposit of so much moisture as one would expect from an eastern fog or "sea turn." At Santa Barbara an invalid can spend about two hundred and fifty entire days annually in the open air without running the risk of a wetting. The invalid will find among the hills warmer winter nights than at any other place in California, and may safely spend his time out of doors in all but ten or twelve days of the year, sleeping comfortably, nearly all the year round, under the stars, whose brilliancy is proverbial.

Climatology of Muskoka, Canada.—Dr. J. H. Elliott, of the Muskoka Sanitarium, read this paper. This region is east of Georgian Bay and north of Toronto, and is called "The Highlands of Ontario." The elevation varies from 600 to 1,400 feet, and the latitude is that of St. Paul and Minneapolis. Lakes Muskoka, St. Joseph and Rosseau have an altitude of 750 feet and are connected by waterways. The region considered covers an area of 1,500 square miles, is well wooded, and has a wonderful variety of scenery, with an adaptability of the surroundings to the needs of the neurasthenic and the tuberculous. There is exemption from hay fever. The severe winters are enjoyed by the robust patient and those whose recuperative powers are good, but patients whose capillary circulation is poor and are anemic cannot stand the cold. The winters are free from rain, fog and dampness. The summers and autumn are ideal. The results in the treatment of tuberculosis are most gratifying. There are two sanatoria managed by the National Sanatorium Association of Canada, on Muskoka Lake near Gravenhurst.

Dr. Lawrason Brown, of Saranac Lake, read a paper entitled "Some Weather Observations in the Adirondacks." (See MEDICAL NEWS, August 20, 1904, p. 341).

Dr. Guy Hinsdale, of Hot Springs, Virginia, read a paper on "The Climate and Waters of Hot Springs, Virginia." (Will appear in a subsequent issue of the MEDICAL NEWS).

A Meteorological Study of the Winter of 1903-4.—Dr. Carroll E. Edson, of Denver, Col., read this paper. His paper was accompanied by a series of charts showing that Denver had a mild winter while the cities in the East and Middle West had an unusually severe one; Boston, New York, Buffalo, Chicago and Denver were compared. Dr. Edson showed that while Buffalo had 112 totally cloudy days out of 152, Denver had only 18. He cited all the factors of climate to show that Denver was far better suited for the outdoor treatment of tuberculous patients than any of the other cities mentioned. He claimed that all fresh air is not equally good and that a location like that of Denver offers, by the conditions of its climate, its lack of storms, its absence of cloud and its warmer sunshine, definite advantages for the tuberculous invalid. In the tables there are side columns giving the mean of the last thirty-three years; so that one can see what the slight variation of this one year has been. In the article on Denver in *Wood's Reference Handbook*, the author anaylzed three successive years in detail.

Ocean Bathing.—Dr. Philip Marvel, of Atlantic City, N. J., read a paper on this subject. He cautioned against too prolonged an exposure in the ocean, the habit of going about the beach in wet clothing and too frequent indulgence. The body temperature is lowered and the pulse beats reduced and the economic forces temporarily inhibited, and in some instances seriously deranged. Sea-bathing is contra-indicated in those cases in which the arterial elasticity for any reason has been changed or lost as in arteriosclerosis and capillary fibroses; when the peripheral vessels cease to respond to reflex stimuli; in all cases of recent rheumatism or gastro-intestinal disease.

The Delirium Noticed in Heart Disease.—Dr. Roland G. Curtin, of Philadelphia, read this paper. He said that the great difficulty in studying and classifying the symptoms of advanced heart disease is that it is often hard to sharply separate the symptoms depending on the primary condition from those of the commonly associated complications. The cases are rare, Dr. Curtin having met with only four, in which the insanity was continual. The delirium of the last stage of heart disease differs from that in other diseases in being more melancholy and with suicidal tendencies in some cases. The delirium is almost always after sleeping and it is easy to arouse the patient from the delirious state. The symptoms are quite acute and active in cases unassociated with dropsy and great weakness, but less so in cases with anasarca; more frequent in those advanced in life and the symptom is grave, from which the patient rarely rallies.

Dr. Robert H. Babcock, of Chicago, opened the discussion, saying that after a thorough search he had found only three articles published on the delirium of chart disease. Riegel's paper, published in 1879, described this form of delirium as a toxemia due to the administration of drugs in the attempt to remove the dropsies and other symptoms incident to the cardiac inadequacy. The patients later may pass into a state of collapse from which they may not recover. The second paper bearing on this subject was entitled "Toxemic Delirium of Heart Disease," published by Eichhorst in the *Zeitschrift für klinische Medizin*, in 1898. Eichhorst calls attention to mental disturbance in certain cases of mild cardial disease which enter the hospital in a state of broken compensation and of dropsy. During the attempt to relieve the dropsy by means of digitalis and diuretin, delirium developed, which either active or of a low, muttering kind, and was preceded by somnolence. As the dropsy disappeared the patients became rational and returned to their former normal state. Eichhorst believed these symptoms were due to the

absorption of toxins incident to the removal of the edema and that they were not due to drugs, since these drugs were not administered in sufficient doses to produce these effects and did not produce like effects in other patients. Dr. Babcock had seen two cases during the past winter in whom this symptom developed. One was a case of mitral insufficiency, with chronic fibrous mediastinal pericarditis, with dropsy, and during the administration of large doses of diuretin for the purpose of carrying off the dropsy, this patient became delirious, his delirium manifesting itself at night. The second was an elderly man, with chronic myocarditis, the vascular form of aortic regurgitation, and chronic interstitial nephritis. This man, when dropsical and the edema was being removed by proper remedies, became mildly delirious, not recognizing objects in the room; talking about business and mistaking a picture in the room for a powerful Irishman who wanted to get into the bed and turn him out. He frequently said that he could breathe if he could start his breathing first before that big Irishman in the corner did. It was a singular form of delusion. In both these instances Dr. Babcock inclined to attribute the mental disturbance to the effect of toxins; although it is conceivable that some degree of cerebral edema might be responsible for the condition. He thinks it is one of great importance and which one should study with a view to more definite facts concerning this symptom, since it appears to be a very important one. One case recovered.

Dr. Beverley Robinson, of New York, said that one seldom has disease of the heart without other disease existing elsewhere as in the kidneys or the brain. Faulty metabolism, not connected with the heart particularly, and reabsorption of poisons through a defective action of the kidneys account for this. Dr. Robinson said that he had seen in private practice particularly, what he considered to be a neurotic heart. They are associated with anemia, a diastolic bruit, low hemoglobin, and a low specific gravity of urine.

Dr. De Lancey Rochester, of Buffalo, said that in reference to diuretin, he recalled two cases seen this winter in which there was apparently no disease of the kidney but where there was pronounced cardiac disease; cardiac dilatation resulting from overstrain on top of a previously existing mitral lesion and edema and ascites. He used diuretin to relieve the edema, and in turn a pronounced delirium followed the use of diuretin. Diuretin, or any other stimulating diuretic, is, in his opinion, contra-indicated in any case of cardiac disease associated with which there is existing disease of the kidney; for the relief of the edema we should rely upon the sweating apparatus rather than upon stimulating the kidney; but in these two cases there was apparently no disease of the kidney; the urea was apparently perfectly normal; but still, following the use of diuretin, delirium resulted in quite a pronounced degree. Whether this particular drug has a poisonous effect he does not know; but it was interesting to him when Dr. Robinson mentioned that delirium had occurred during the use of diuretin. In answer to the question from Dr. Babcock as to what dose of diuretin Dr. Rochester used, the latter replied, "one gram four times a day."

Dr. James M. Anders, of Philadelphia, said that after the tricuspid valve becomes incompetent the heart and the lungs no longer bear the entire brunt of the cardiac lesions, but now every organ of the body shares in the work of carrying the burden. We have venous congestion—increased pressure in the venous side of the circulation; and the point that the profession ought to remember in this connection is, that this is a distinctly pathological condition; it means starvation of tissue throughout the entire body; it means accumulation of waste products in every organ in the body; it also implies distinct tissue alterations or changes in the various organs of the body, including naturally the brain. Now other considerations enable the profession to understand why it should have disturbance of the function of the brain in these cases, the same as disturbance of the function of the liver, the gastro-intestinal tract, the kidneys and other organs of the body. This is the explanation of most cases of delirium that sometimes arise in the course of organic valvular disease. Now there is one other causative factor often lost sight of, and that is, the altered blood changes. Under these circumstances a general arteriosclerosis and fibrosis of the viscera are engendered and delirium may develop before any evidence of failure of compensation exists.

Dr. R. G. Curtin, of Philadelphia, said in answer to Dr. Robinson's statement in regard to the associated kidney disease, that was excluded as far as possible to exclude it; there was no albuminuria in the cases at the time the observations were made. He has seen a great many cases where there has been a slight amount of albumin in the urine, in which there has been delirium; but he did not report cases in which this seemed to be a factor. Also, in regard to the subject of diuretin—only four of the cases were treated by diuretin, and one of the cases perfectly recovering was one of the cases put upon that drug. He has used this drug extensively during the last ten years and has never suspected it as a cause of delirium or of any other nervous manifestation.

Mechanical Treatment of Heart Disease.—Dr. Charles E. Quimby, of New York, read a paper with this title. He advocated the use of the pneumatic cabinet for cases of aortic regurgitation. It affords relief to a crippled and overtaxed heart and excels any other measure in the results obtained. In mitral regurgitation the effect is often as immediate and definite, but less in degree and duration. In angina it is *facile princeps* in the rapidity and permanency of relief afforded.

The General Principles of Management of Pulmonary Tuberculosis.—This was the subject of Dr. S. G. Bonney, of Denver, Col. He advocated sanatorium treatment only in certain cases. Continued vigilant supervision is necessary for some cases, but unfortunate or detrimental to others. The influence of the physician himself is the predominant factor. The sanatorium itself being in most instances a most beneficial accessory to the good result rather than a *sine qua non*.

Is Milk a Factor in the Spread of Tuberculosis.—Dr. J. O. Cobb, of the United States Public Health and Marine Hospital Service, read this paper. He holds that milk is not a factor of any importance. He showed that in many countries where tuberculosis prevails milk is not used to any extent as food. The cattle of the islands of Guernsey and Jersey are free of tuberculosis but the people have it as usual. The Chinese and the Alaska indians have tuberculosis but do not use milk as an article of diet. They sometimes use it if prescribed by physicians or through living with Europeans.

Dr. A. Jacobi differed from the views expressed and said that negative assertions do not prove any-

thing against a single positive one. The literature is too rich to be overlooked. He believes in sterilization in all cases of doubt; in mixing milk from thirty or forty cows so that by dilution there may be safety in case one is infected.

Some Cases of Pus Infection Simulating Pulmonary Tuberculosis.—Dr. Robert H. Babcock, of Chicago, read this paper. The histories of five cases were given. They are believed to represent a class of cases which present considerable difficulty in differential diagnosis.

Dr. J. O. Cobb, of Detroit, Mich., in discussing Dr. Babcock's paper, said he thought that Dr. Babcock's cases are really infected pneumonias, because the profession knows that the pulmonary tissue acts as a screen and sieve to take out of the circulation any infective material in it. It is also aware that interference with a gluteal or rectal abscess of tuberculous origin often sets up a very rapid infection of the lungs. The lungs and liver are essentially the sieves for the circulation, and he thinks that is the explanation of Dr. Babcock's cases of lung consolidation in the case of an ordinary pus infection elsewhere. Now, if that pus infection elsewhere were due to streptococci and they got into the circulation and then were screened out in the lungs, then one would have a pyemia—a very rapid pyemia which would destroy the patient. But it has been brought forward that even gonococci will be washed out in the lungs and produce a consolidation and still not break down; but streptococci will invariably break down, but not always diplococcus infection. This has been illustrated from mastoid infection where it is not due to the streptococcus, for often one will have an infective pneumonia, and he thinks that is the explanation of Dr. Babcock's cases.

Dr. Babcock said that inasmuch as circulatory derangements within the abdomen may be secondary to pulmonary disease, might it not be that circulatory derangements within the lungs may be secondary to abdominal disease? He is interested in Dr. Cobb's suggestion that the abnormal pulmonary findings were due to infection. So it is; but it did not seem to Dr. Babcock that in any one of his cases there was actual lung consolidation. The dulness was not intense enough, nor were the breath sounds distinctly bronchial. It impressed him much more that there was simply some circulatory disturbance in the two first cases; that is, those cases in which there was pus infection from suppurative peritonitis. Therefore he was inclined to attribute the changes to pulmonary anemia; for if pulmonary anemia does produce relaxation and diminution in the volume of the lungs with passive decrease in the capacity of the thorax, it seemed to him that such a condition could be responsible for the slight impairment of resonance and the change of respiratory murmur noted and which was so slight as to be scarcely definable. The general condition is favorable for the production of pulmonary anemia in such cases. In the case of gall-bladder and empyema, there was unmistakable dulness in the posterior aspect of the right lung. What that was due to he could not say, he simply knows it cleared up, and it is interesting to speculate whether it was due to mechanical pressure from a distended gall-bladder or was some circulatory derangement, as a pulmonary hyperemia, depending upon the sensory irritation; or whether it was a manifestation of a lung reflex. Striker narrates a very interesting case in which he saw a woman with very distressing and alarming symptoms of pulmonary hyperemia and distention of the right heart secondary to a cholelithiasis. Relief from the pain of the cholelithiasis brought with it next morning a disappearance of the alarming symptoms. This suggested to Dr. Babcock that perhaps in this case the pulmonary findings were really due to sensory irritation—ill defined to be sure, but sensory irritation nevertheless, from the distended gall-bladder. He would like for a moment to dwell also on the importance of a leucocyte count. This has become so common that one always thinks of it and resorts to it, in any case of suspected pus infection; but in these cases, which come to the profession sometimes with symptoms very suggestive of incipient tuberculosis and in which the pulmonary findings are so vague, that one is not quite satisfied whether pulmonary disease does or does not exist—he believes the leucocyte count is of value. Leucocytosis does not exist in pulmonary tuberculosis unless there be mixed infection; and when mixed infection takes place, the pulmonary changes are so pronounced that anyone can discover them; whereas in very early tuberculosis —those cases in which there is a desire for the good of the patient to discover the disease at a time when it may be amenable to treatment—the leucocytes are not increased, but are actually diminished.

CONGRESS OF INTERNAL MEDICINE.

Twenty-first Session, held in Leipzig, April 18, 19, 20 and 21, 1904.

(Continued from Page 576.)

Physiology of Cardiac Nerves.—By means of a new method, Ascher comes to the following conclusions. The activity of the cardiac nerves depends upon the amount of nutrition. Every sudden change of temperature will diminish the irritability of the vagus; gradual lowering of the temperature will also reduce it, while raising the temperature is without effect. There is also an increased irritability if the intracardial pressure is raised, but this is soon followed by adaptation. The difference between inhibitory and accelerating nerves does not lie in the nerves themselves, but in the endbodies. These are affected also by iodothyrin, which paralyze the action of the atropine.

Inhalation of Drugs.—An active diffusion through the epithelium of the bronchi and the delicate wall of the pulmonary vessels probably occurs, for Reitz could detect many inhaled drugs in a short time in the urine and blood. Thus, much more iron could be detected in the blood when organic iron was sprayed into the throat than when it was given by mouth. Schmidt thinks that considerable absorption already occurs in the trachea.

New Diagnostic Sign of Pancreas Disease.—Since the pancreatic juice contains the only ferment which is able to digest the nuclei of tissues, A. Schmidt gives suspicious cases small pieces of meat in wafers, and then examines the feces. In severe lesions of the pancreas, the muscle remnants will appear with intact nuclei, while in other diseases or in health the nuclei will be digested.

Hemolysis.—Koeppe regards the laking of blood under various conditions as a purely physical or chemical process. The red cells are all surrounded by a membrane containing a fatty and an albuminous principle. By repeated freezing and thawing, by the addition of water and after the use of electricity, the membrane is simply torn; heat will melt the fatty constituent; acid will split it into alcohol, and fatty acid alkali will saponify it, while serum-hemolysis is brought about by disintegration of the proteid principle.

Streptococcus Serum.—Menzer employs a serum which has not been passed through animals and has seen

good results in chronic, protracted cases of muscular rheumatism and in the mixed infection of tuberculosis.

Action of Digitalis.—Brandenburg finds that besides its other properties, digitalis renders the heart muscle less susceptible toward external influences. If digitalin is injected into the heart of a frog, electric currents will no longer bring about extrasystolic contractions.

Virulence of Pneumonic Sputum.—If white mice are inoculated with one cubic centimeter of the same pneumonic sputum, they generally die within the same time, so that these animals may be used to measure the virulence of a sputum. Stuertz has made the interesting observation that the prognosis can be determined in this manner for the virulency is very high in severe or fatal cases. Exacerbations can be determined more readily this way than by physical signs and earlier than by other symptoms.

Levulosuria in Liver Disease.—In more than 80 per cent. of all hepatic cases and in less than 20 per cent. of those without liver lesion, Strauss could bring about an alimentary levulosuria. This may be a valuable aid in the diagnosis of difficult cases.

New Eye-Symptom in Diabetic Coma.—In three cases of diabetic coma, P. Krause observed a well-marked hypotonia of both bulbs 15 to 32 hours before death. In other comatose conditions this symptom was not present. The cause could not be ascertained, and it seems certain that diminution of blood-pressure and of the amount of water, or the pressure of acetone, diacetic or oxybutyric acids have nothing to do with it. The anatomical examination of the bulbs was negative.

Motor Function of the Vagus.—Three causes are generally given for diffuse esophageal dilatation: Cardiospasm, paralysis of the musculature and atrophy of the vagus. Starck tried to bring about dilatation in the dog by resecting the vagus in the neck, above and below the helus of the lung and above the cardia. The results are: Reaction in the neck and above the hilus will paralyze the musculature and thus favor dilatation. Atrophy of the vagus is only a cause if the musculature is not hypertrophied. Since this is, however, the case in most instances, vagus degeneration will rarely play an etiological rôle. No dilatation occurs if the vagus is resected beneath the hilus, since the motor fibers reach the esophagus above the hilus. The absence of relaxation of the cardia during swallowing does not form sufficient impediment to cause dilatation.

Chemistry of the Diazo Reaction.—Clemens has succeeded in obtaining the substance underlying the Ehrich diazo reaction, in concentrated form, but could not separate it from all impurities.

Fat in the Urine of Nephritis.—It was formerly supposed that the pressure of fat in the urine of patients suffering from chronic parenchymatous nephritis is caused by fatty degeneration of the cells, but Winternitz believes it is due to the fact that the renal filter permits the fat of the blood to pass through. The amount of fat may reach a very high degree.

Treatment of Hyperacidity.—Since the amount of chlorine in the feces in hyperacidity of the stomach is often abnormally low, it is safe to assume that the absorption of chlorides is very active. Leo, therefore, restricted all salt from the food, but without effect. Better results were obtained with rectal and gastric lavage with four to ten per cent. solutions of salt; the pain and hyperchlorhydria often disappeared in a short time.

Influence of Fever upon Various Diseases.—Dehio investigated the influences of fever induced by injecting peptone upon lupus, recent syphilis and acute gonorrhea. Among thirteen cases of lupus, three were cured completely. In six cases there were recurrences which were treated with the sharp spoon. In a few cases of gonorrhea, the discharge ceased completely.

Effect of Different Proteids on Diabetes.—Falta studied the influence of casein, serumalbumin-fibrin, globulin, hemoglobin and egg-albumin in four cases of severe diabetes. It seems that the sugar is most abundant with those proteids which are most rapidly decomposed (the first-mentioned members of the group). Coagulated egg-albumin seems to be more harmful than incoagulated.

Disturbances of Speech in Neurasthenia.—Four forms of disturbance of speech in neurasthenia are recognized by Gutzmann: (1) Disturbances in the memory of speech; (2) disturbances of association; (3) easy fatigue of the muscles; (4) emotional effects, and (5) disturbances of co-ordination, especially stuttering.

Estimation of Cellulose in Feces.—Simon dissolves the cellulose by boiling the feces with 50 per cent. potash-lye, and then precipitates with 96 per cent. alcohol. In constipation the cellulose seems to be used up better than under normal conditions.

NEW YORK ACADEMY OF MEDICINE.

Section on Genito-Urinary Diseases.

Stated Meeting, held May 18, 1904.

The President, James Pedersen, M.D., in the Chair.

Perineal Prostatectomy With Severe Cystitis, Followed One Year Later by Phosphatic Calculus; Litholapaxy; Cure.—Dr. A. A. Berg reported the case of a man, sixty years old, who came to the Mount Sinai Hospital one year ago last summer with the usual symptoms of prostatic hyperthrophy. There were from two to three ounces of residual urine. The prostate was small and atrophic rather than hypertrophic. There was considerable cystitis and the patient suffered a great deal under general anesthesia. Perineal section was made for the removal of the prostate. This gland was found to be very small, with the middle lobe about the size of a hazelnut; the operation was easily performed, lasting only twenty minutes. The drainage was retained in the bladder six days. Then the improvement in the cystitis was so evident that the drainage was removed. He continued to wash out the bladder daily with weak solution of nitrate of silver. The wound closed completely in three weeks but the patient was kept in the hospital until the cystitis showed evidences of improvement. He was then discharged with instructions to return for further bladder washings. This he failed to do. The symptoms of retention were completely relieved and there was no residual urine; he passed water with normal frequency and thought he had recovered normal conditions. The patient then was lost track of until last summer when he appeared complaining again of symptoms of cystitis. The cystoscopic examination showed a calculus a little larger than a hazelnut lying at the base of the bladder and a considerable cystitis. By irrigations of 1-5,000 silver nitrate solution the existing cystitis was reduced before operation was proceeded with. After two weeks in the hospital the cystitis improved and then, under cocaine anesthesia, with a lithotrite the stone was crushed and the particles removed with the evacuator. The cystoscopic examination showed that all the particles of stone had been removed. The patient was kept in the hospital for two weeks and his bladder repeatedly washed. Later he returned and reported that all was doing well, his urine was clear and he had no difficulty in voiding it. He got up but once at night to pass his urine and

during the day he urinates about three times. He says that he is completely cured. The case was reported as one of atrophic prostate with evidences of cystitis and subsequent formation of a calculus.

Case of Prostatism.—Dr. Edward L. Keyes, Jr., reported such a case in a patient upon whom he operated two years ago. The symptoms of prostatism only existed six weeks prior to operation. This patient had retention and a violent cystitis following. Because of the serious implication of the kidney he felt justified in advising operation. The prostate was burned down and he never saw an individual bear a perineal tube worse. The wound healed kindly and the patient was able to empty his bladder except about one-half an ounce. He was very sensitive and permitted no instrumentation until about six months later when the searcher revealed a stone. The removal of this calculus relieved all symptoms.

Complete Destruction of the Kidney by Multiple Metastatic Abscesses.—Dr. A. A. Berg said that he had presented a similar case to the Section some two months ago. The patient was a young girl, an operator, who came into the surgical service of Dr. Gerster during the month of Februry, 1904. The history given was that some one month before she had a paronychia on one of her fingers (this was obtained from her subsequent to the operation). For one month she had considerable pain in the right hypochondrium, with fever, chills, loss of strength and much prostration. Urination was comparatively normal, thrice daily and not at all during nights. She said that her urine was clear and never contained blood. The physical examination showed all the internal organs to be normal, but in the right hypochondrium there was a large mass, the size of two fists, very tender and hard, with the colon in front and to the inner side of it; it was immovable with respiration. Examination of the bladder with the cystoscope showed everything to be normal. The urethral orifice was normal. Bilateral catheterization was undertaken and, on the right side, the catheter left in one-half an hour drained no urine; but on the left side one-half an ounce was withdrawn. Cryoscopy of the urine from the left side showed its freezing point to be 1.7; that of the blood was .58. A tumor of the kidney, probably of suppurative type, was diagnosed and operation was advised and consented to. Upon cutting down upon the kidney it was found to be filled with multiple abscesses; no kidney tissue could be recognized as such. There were hundreds of small abscesses from the size of a pin-head to a hazelnut. There was absolutely no trace of kidney tissue visable. This, of course, accounted for there being no kidney secretion on the right side. The only cause for this condition that could be found was the paronychia and to this was attributed the suppurative process. Last summer, he said, he had operated upon a similar case but the site of infection was from an abrasion on the side of the foot from the wearing of a tight shoe. In the case presented the miliary abscesses were curetted and the cavities packed with gauze and allowed to fill up from the bottom. The patient rapidly gained in weight and in strength and has been in a healthy condition ever since.

Dr. F. Tilden Brown said that in those cases of suppurative processes in the kidney were more commonly perinephritic suppurations secondary to a streptococcus infection from some cutaneous surface. He asked if any subsequent examination had been made to ascertain whether or not the urine was now coming from the right ureter? Whether the kidney tissue that was left had been able to functionate or show any activity whatever? He said he was inclined to suspect some antecedent suppurative process in the kidney. He said it would be interesting to learn if there ever had been cases similar to this in which there was no history of urine or pus passing.

Dr. Robert T. Morris said that two years ago he split a kidney in its entire length and found a large number of abscesses in the parenchyma and he decided to risk leaving the kidney; therefore, it was drained and the patient made a good recovery, and he subsequently found the kidney was doing very good work. There must have been several hundreds of these small abscesses left that were not opened. The patient made a very good recovery.

Dr. Howard Lilienthal said he had seen several of these cases and one he had reported several years ago in the *Annals of Surgery*, in which there were miliary abscesses in each kidney following an attack of erysipelas of the face. Repeated double nephrotomy was performed and the patient finally recovered. In the cases that he had seen the urine contained no pus at all. As a result of experimental work and post-mortem findings he said he had come to the conclusion that these metastatic abscesses were practically always found in the cortex of the kidney, and at first did not cause any changes of any note in the urine, not even albumin or casts. In such a case as reported by Dr. Berg it seemed to him likely that there must have been a plug or some sort of pressure on the ureter to account for the total absence of urine from the ureteral catheter. It was a well-known fact that in destructive processes of the kidney, when even a little bit of the kidney substance is left this remnant will secrete urine. He thought a total anuria from that side must have been of neurotic origin or from pressure of some kind upon the ureter. In regard to perinephric abscesses occurring under these circumstances he did not believe that they ever occurred as a primary infection, but always were the result of a breaking into the perinephric tissues of cortical abscesses in the kidney. He could not answer why abscesses should form in the perinephric fat as the result of metastatic invasion, but he could see every reason for believing that these abscesses might occur in the cortex. When these abscesses break down into the perinephric fat then we would have perinephric abscesses. Perinephric abscess *per se* does not occur except as secondary to suppuration in the kidney or some neighboring organ.

Dr. A. A. Berg, in answer to the question raised by Dr. Brown, answered that a subsequent cystoscopic examination had not been made. He believed the suggestion was a good one and he would carry it out, although he did not believe that much would be found. Regarding an old obstruction of the ureter as explaining the right-sided anuria, there were no symptoms of it given in the history. Some albumin and casts were found in the urine but no pus or blood and no increased urination. Examination of the mouth of the ureter in those cases where secretion of urine had been brought to an end by plugs in the ureter usually shows some slight changes, either a retraction or ulceration, *e.g.*, in a pyogenic pyonephrosis. In the case reported the ureteral orifice was absolutely normal. The catheter was introduced about 8 or 10 inches and met with no obstruction and he did not believe there was any plug in the ureter. With regard to the condition of the kidney when it was cut down upon Dr. Gerster remarked at the time that he had never seen such complete destruction of the organ. An extensive search of the remnant of the kidney was made but nothing was found, only a large number of abscesses surrounded by inflammatory tissue.

With regard to the question of a nephrotomy or a nephrectomy for metastatic miliary pyogenic emboli in the kidney, this was a wide question and it should be

remembered that pyogenic organisms act upon the kidney in many ways; they can produce a chronic contracted or a chronic diffuse nephritis like Bright's disease; such cases often do very well with incision and drainage. On the other hand pyogenic organisms might produce large infarctions of the kidney which undergo suppuration and, in such instances, he believed nephrectomy the better procedure. In the type of cases, such as presented in which there was a most complete destruction of kidney substances, a nephrotomy would be of no value. He agreed that, as a rule, perinephritic abscesses in any of these cases was the result of kidney suppuration. The kidney suppuration occurs first and then there was a perinephritic suppuration following.

Dr. F. Tilden Brown said that Dr. Lilienthal's remark about the nephritic abscesses preceding the perinephritic abscesses seemed to him to be in accord with the facts as shown in the majority of the cases, but he did not believe that the profession could accept that statement as being invariably the case. He said that it seemed to him that in view of the fact that a number of the cases were not examined after considerable perinephritic abscesses had been evacuated the condition of the kidney itself was not determined and, therefore, it could not be said that they were always normally functionating. One should not say that without exception perinephritic abscesses were secondary to abscesses in the cortical portion of the kidney. Dr. Brown reported cases of two brothers one year ago; both had perinephritic abscesses secondary to kidney lesions; examination of the kidney failed to reveal anything although the kidneys were not brought to view.

Dr. L. Bolton Bangs said he would corroborate what Dr. Brown had just stated. He had opened and drained perinephritic abscesses which had no connection, at least at the time of operation, with the kidney substance, and none subsequently because the patients had recovered and there had been no occasion to attack the kidneys except for purpose of examination.

Dr. Lilienthal said that he explained these cases by assuming that these abscesses had perforated into the perinephritic tissues. Many of these perinephric abscesses he had opened and drained and had not found it necessary to go further. But there were others that he had open and drained and had subsequently been compelled to go further, when he had found other abscesses in the kidney substance that had not been opened and had not drained.

Funiculitis.—Dr. James Pedersen presented the young man with funiculitis, whom he had shown at the March meeting of the Section. He presented him to show that under purely expectant treatment the tumefaction had considerably subsided. A specific urethritis is still present. As all attempts to relieve this, even by means of hand injection, have caused a threatened relapse of the epididymitis, all local treatment has been abandoned in favor of constitutional treatment with cod-liver oil, Russell's emulsion and iron.

A Case of Atrophy of Testis, Hardened Epididymis, Hydrocele and Varicocele.—Dr. Ramon Guiteras presented a patient, twenty-eight years old, who had had several attacks of urethritis and, on one occasion, a double epididymitis. Now his right testicle was atrophied, and there was a hardened epididymis and vas deferens on the left side with some fluid in the tunica vaginalis on both sides. The hardness of the epididymis was very peculiar when last examined. He simply presented the case as one of interest. There was also a varicocele on the left side.

Calcareous Accumulation in the Bladder and Urethra Giving Rise to Retention.—Dr. Ramon Guiteras said that two years ago a patient entered the Columbus Hospital with a diagnosis of stone in the urethra. Examining the patient under ether he was with difficulty able to pass a tunnel sound into the urethra and he found that a stone occupied the whole caliber of the urethra; he finally managed to pass the stone and enter the bladder. He then made a perineal section and, instead of finding one stone, he found the prostatic and membranous portion and part of the bulbous, filled with small calculi and pieces of calculi resembling those that had been crushed. The bladder, too, seemed to be packed with calculi in pieces, and one was about the size of a pigeon's egg. With forceps he managed to extract all the pieces of calculi without crushing them. One would have believed that a very large calculus had been previously crushed, but there was no such history given. The bladder was much thickened. With two fingers in the rectum and the other hand placed suprapubically he could feel what appeared like the crop of a fowl filled full of gravel.

(To be Continued.)

BOOKS RECEIVED.

Chir. Orthopedique. By Profs. Paul Berger and S. Banzet. 624 pages. Illustrated. G. Steinheil, Paris.

The Summer Diarrhœas of Infants. By Dr. H. Illoway. 12mo, 150 pages. E. R. Pelton, New York.

Modern Ophthalmology. By Dr. Jas. Moores Ball. 8vo, 820 pages. Illustrated. F. A. Davis Co., Philadelphia.

Anti-typhoid Inoculation. By Dr. A. E. Wright. 21mo, 76 pages. Illustrated. Archibald Constable & Co., Ltd., Westminster.

The Purin Bodies of Foodstuffs. By Dr. I. Walker Hall. Second Edition, 12mo, 201 pages. P. Blakiston's Son & Co., Philadelphia.

Veterinary Pathology. By Drs. Friedberger and Frohner. Translated by Dr. M. H. Hayes. Volume 1. 8vo, 519 pages. W. T. Keener & Co., Chicago.

Diseases of the Nose and Throat. By Dr. D. Braden Kyle. 8vo, 669 pages. Illustrated. W. B. Saunders & Co., Philadelphia, New York and London.

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